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National Occupational Classification



Occupational Descriptions



LM-541-08-1

NATIONAL OCCUPATIONAL CLASSIFICATION MATRIX 2006

The National Occupational Classification (NOC) matrix provides an overview of the classification at the minor group level. It also illustrates how the NOC is accessible on the basis of skill level, skill type, or on a combination of these two criteria. The four skill level categories are listed on the left side of the matrix, while nine skill type categories are listed across the top. The tenth skill type category (0 Management Occupations) is organized across the top of the matrix. In most cases, each matrix cell consists of a major group.

	1 BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS	2 NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS	3 HEALTH OCCUPATIONS	4 OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION	5 OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	6 SALES AND SERVICE OCCUPATIONS	7 TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS	8 OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY	9 OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES
					Major Group 00 SENIOR MANAGEMENT OCCUPATIONS 001 Legislators and Senior Management				
0 MANAGEMENT OCCUPATIONS	011 Administrative Services Managers 012 Managers in Financial and Business Services 013 Managers in Communication (Except Broadcasting)	021 Managers in Engineering, Architecture, Science and Information Systems	031 Managers in Health, Education, Social and Community Services 041 Managers in Public Administration	051 Managers in Art, Culture, Recreation and Sport	061 Sales, Marketing and Advertising Managers 062 Managers in Retail Trade 063 Managers in Food Service and Accommodation 064 Managers in Protective Service 065 Managers in Other Services	071 Managers in Construction and Transportation 072 Facility Operation and Maintenance Managers	081 Managers in Primary Production (Except Agriculture)	091 Managers in Manufacturing and Utilities	
SKILL LEVEL A Occupations usually require university education.	Major Group 11 PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE 111 Auditors, Accountants and Investment Professionals 112 Human Resources and Business Service Professionals	Major Group 21 PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES 211 Physical Science Professionals 212 Life Science Professionals 213 Civil, Mechanical, Electrical and Chemical Engineers 214 Other Engineers 215 Architects, Urban Planners and Land Surveyors 216 Mathematicians, Statisticians and Actuaries 217 Computer and Information Systems Professionals	Major Group 31 PROFESSIONAL OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT 311 Physicians, Dentists and Veterinarians 312 Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals 313 Pharmacists, Dietitians and Nutritionists 314 Therapy and Assessment Professionals 315 Nurse Supervisors and Registered Nurses	Major Group 41 PROFESSIONAL OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICES AND RELIGION 411 Judges, Lawyers and Quebec Notaries 412 University Professors and Assistants 413 College and Other Vocational Instructors 414 Secondary School Teachers and School Secretaries and Educational Counsellors 415 Psychologists, Social Workers, Counsellors, Clergy and Probation Officers 416 Policy and Program Officers, Researchers and Consultants	Major Group 51 PROFESSIONAL OCCUPATIONS IN ART AND CULTURE 511 Librarians, Archivists, Conservators and Curators 512 Writing, Translating and Public Relations Professionals 513 Creative and Performing Artists				
SKILL LEVEL B Occupations usually require college education or apprenticeship training.	Major Group 12 SKILLED ADMINISTRATIVE AND BUSINESS OCCUPATIONS 121 Clerical Supervisors 122 Finance and Regulatory Occupations 123 Finance and Insurance Administrative Occupations 124 Secretaries, Recorders and Transcriptionists	Major Group 22 TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES 221 Technical Occupations in Physical Sciences 222 Technical Occupations in Life Sciences 223 Technical Occupations in Civil, Mechanical and Industrial Engineering 224 Technical Occupations in Electronics and Electrical Engineering 225 Technical Occupations in Architecture, Drafting, Surveying and Mapping 226 Technical Inspectors and Regulatory Officers 227 Transportation Officers and Controllers 228 Technical Occupations in Computer and Information Systems	Major Group 32 TECHNICAL AND SKILLED OCCUPATIONS IN HEALTH 321 Medical Technologists and Technicians (Except Dental Health) 322 Technical Occupations in Dental Health Care 323 Other Technical Occupations in Health Care (Except Dental)	Major Group 42 PARAPROFESSIONAL OCCUPATIONS IN LAW, SOCIAL SERVICES, EDUCATION AND RELIGION 421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.	Major Group 52 TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT 521 Technical Occupations in Libraries, Archives, Museums and Art Galleries 522 Photographers, Graphic Arts Technicians and Technical Co-ordinating Occupations in Motion Pictures, Broadcasting and Performing Arts 523 Artists and Other Performers 524 Creative Designers and Craftpersons 525 Athletes, Coaches, Referees and Related Occupations	Major Group 62 SKILLED SALES AND SERVICE OCCUPATIONS 621 Sales and Service Supervisors 622 Technical Sales Specialists, Wholesale Trade 623 Insurance and Real Estate Sales Occupations and Buyers 624 Chefs and Cooks 625 Butchers and Bakers 626 Police Officers and Firefighters 627 Technical Occupations in Personal Service	Major Group 72/73 TRADES AND SKILLED TRANSPORT AND EQUIPMENT OPERATORS 721 Contractors and Supervisors, Trades and Related Workers 722 Supervisors, Railway and Motor Transportation Occupations 723 Mechanics and Related Occupations 724 Electrical Trades and Telecommunication Occupations 725 Plumbers, Pipefitters and Gas Fitters 726 Metal Forming, Shaping and Erecting Trades 727 Carpentry and Cabinetmaking 728 Joinery and Plastering Trades 729 Other Construction Trades 731 Machinery and Transportation Equipment Mechanics (Except Motor Vehicle) 732 Automotive Service Technicians 733 Other Mechanics 734 Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations 735 Stationary Engineers and Power Station and System Operators 736 Train Crew Operating Occupations 737 Crane Operators, Divers and Blasters 738 Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.	Major Group 82 SKILLED OCCUPATIONS IN PRIMARY INDUSTRY 821 Supervisors, Logging and Forestry 822 Supervisors, Mining, Oil and Gas 823 Underground Miners, Oil and Gas Drillers and Related Workers 824 Logging Machinery Operators 825 Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture 826 Fishing Vessel Masters and Skippers and Fishermen/Women	Major Group 92 PROCESSING, MANUFACTURING AND UTILITIES SUPERVISORS AND SKILLED OPERATORS 921 Supervisors, Processing Occupations 922 Supervisors, Assembly and Fabrication 923 Central Control and Process Operators in Manufacturing and Processing
SKILL LEVEL C Occupations usually require secondary school and/or occupation-specific training.	Major Group 14 CLERICAL OCCUPATIONS 141 Clerical Occupations, General Office Skills 142 Office Equipment Operators 143 Finance and Insurance Clerks 144 Administrative Support Clerks 145 Library, Correspondence and Related Information Clerks 146 Mail and Message Distribution Occupations 147 Recording, Scheduling and Distributing Occupations		Major Group 34 ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES 341 Assisting Occupations in Support of Health Services			Major Group 54 INTERMEDIATE SALES AND SERVICE OCCUPATIONS 541 Sales Representatives, Wholesale Trade 542 Retail Salespersons and Sales Clerks 543 Occupations in Travel and Accommodation 544 Tour and Recreational Guides and Casino Occupations 545 Occupations in Food and Beverage Service 546 Other Occupations in Protective Service 547 Childcare and Home Support Workers 548 Other Occupations in Personal Service	Major Group 74 INTERMEDIATE OCCUPATIONS IN TRANSPORT, EQUIPMENT OPERATION, INSTALLATION AND MAINTENANCE 741 Motor Vehicle and Transit Drivers 742 Heavy Equipment Operators 743 Other Transport Equipment Operators and Related Workers 744 Other Installers, Repairers and Servicemen 745 Longshore Workers and Material Handlers	Major Group 84 INTERMEDIATE OCCUPATIONS IN PRIMARY INDUSTRY 841 Mine Service Workers and Operators in Oil and Gas Drilling 842 Logging and Forestry Workers 843 Agricultural and Horticultural Workers 844 Other Fishing and Trapping Occupations	Major Group 94/95 PROCESSING AND MANUFACTURING MACHINE OPERATORS AND ASSEMBLERS 941 Machine Operators and Related Workers in Metal and Mineral Products Processing 942 Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing 943 Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing 944 Machine Operators and Related Workers in Textile Processing 945 Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing 946 Machine Operators and Related Workers in Food, Beverage and Tobacco Processing 947 Printing Machine Operators and Related Occupations 948 Mechanical, Electrical and Electronics Assemblers 949 Other Assembly and Related Occupations 951 Machining, Metallurgy, Woodworking and Related Machine Operators
SKILL LEVEL D On-the-job training is usually provided for occupations.						Major Group 66 ELEMENTAL SALES AND SERVICE OCCUPATIONS 661 Cashiers 662 Other Sales and Related Occupations 664 Food Counter Attendants, Kitchen Helpers and Related Occupations 665 Security Guards and Related Occupations 666 Cleaners 667 Other Occupations in Travel, Accommodation, Amusement and Recreation 668 Other Elemental Service Occupations	Major Group 76 TRADES HELPERS, CONSTRUCTION LABOURERS AND RELATED OCCUPATIONS 761 Trades Helpers and Labourers 762 Public Works and Other Labourers, n.e.c.	Major Group 86 LABOURERS IN PRIMARY INDUSTRY 861 Primary Production Labourers	Major Group 96 LABOURERS IN PROCESSING, MANUFACTURING AND UTILITIES 961 Labourers in Processing, Manufacturing and Utilities

MATRICE DE LA CLASSIFICATION NATIONALE DES PROFESSIONS 2006

La matrice de la Classification nationale des professions (CNP) présente une vue d'ensemble de la nouvelle classification au niveau des groupes intermédiaires. Elle illustre également la possibilité d'utiliser la CNP en se basant sur le niveau de compétence, sur le genre de compétence ou sur une combinaison de ces deux critères. Les quatre catégories de niveau de compétence sont énumérées verticalement sur le côté gauche de la matrice tandis que les neuf catégories de genres de compétence sont énumérées horizontalement en haut de la matrice. La dixième catégorie de genres de compétence (0 Gestion) se retrouve aussi sur le haut de la matrice. Dans la plupart des cas, chaque cellule de la matrice représente un grand groupe.

	1 AFFAIRES, FINANCE ET ADMINISTRATION	2 SCIENCES NATURELLES ET APPLIQUÉES ET DOMAINES APPARENTS	3 SECTEUR DE LA SANTÉ	4 SCIENCES SOCIALES, ENSEIGNEMENT, ADMINISTRATION PUBLIQUE ET RELIGION	5 ARTS, CULTURE, SPORTS ET LOISIRS	6 VENTE ET SERVICES	7 MÉTIERS, TRANSPORT ET MACHINERIE	8 SECTEUR PRIMAIRE	9 TRANSFORMATION, FABRICATION ET SERVICES D'UTILITÉ PUBLIQUE	
0 GESTION					Grand groupe 00 CADRES SUPÉRIEURE/CAORE SUPÉRIEURE 001 Membres des corps légaux et cadres supérieurs/trades supérieures					
NIVEAU DE COMPÉTENCE A Une formation universitaire caractérisée habituellement les professions.	011 Directeurs/directrices des services administratifs 012 Directeurs/directrices des services fournis par les services aux entreprises 013 Directeurs/directrices des services de communications (sauf la radio/télédiffusion)	021 Directeurs/directrices des services de génie, d'architecture, de sciences naturelles et des systèmes informatiques	031 Directeurs/directrices des secteurs de la santé, de l'enseignement et des services communautaires et sociaux 041 Directeurs/directrices de la fonction publique	051 Directeurs/directrices des arts, de la culture, des sports et des loisirs	061 Directeurs/directrices des ventes, du marketing et de la publicité 062 Directeurs/directrices : commerce de détail 063 Directeurs/directrices de la restauration et des services d'hébergement 064 Directeurs/directrices des services de protection 065 Directeurs/directrices d'autres services	071 Directeurs/directrices de la construction et du transport 072 Directeurs/directrices de l'exploitation et de l'entretien d'immeubles	081 Directeurs/directrices de la production primaire (sauf l'agriculture)	091 Directeurs/directrices de la fabrication et des services d'utilité publique		
NIVEAU DE COMPÉTENCE B Une formation collégiale ou un programme d'apprentissage caractérisé habituellement les professions.	Grand groupe 11 PERSONNEL PROFESSIONNEL DES AFFAIRES ET EN FINANCE 111 Professionnels/professionnelles en finance, en vérification et en comptabilité 112 Professionnels/professionnelles en gestion des ressources humaines et en services aux entreprises	Grand groupe 21 PERSONNEL PROFESSIONNEL DES SCIENCES NATURELLES ET APPLIQUÉES 211 Professionnels/professionnelles des sciences physiques 212 Professionnels/professionnelles de la vie 213 Professionnels/professionnelles en génie civil, mécanique, électrique et chimique 214 Professionnels/professionnelles en génie informatique 215 Professionnels/professionnelles en architecture, en urbanisme et en aménagement 216 Mathématiciens/mathématiciennes, statisticiens/statisticiennes et actuaires 217 Professionnels/professionnelles en informatique	Grand groupe 31 PERSONNEL PROFESSIONNEL DES SOINS DE SANTÉ 311 Médecins, dentistes et vétérinaires 311 Optométristes, chirurgiciens/ chirurgiciennes et autres professionnels/ professionnelles en diagnostic et en traitement de la santé 313 Pharmacien/pharmacienne, diététiste et nutritionniste 314 Professionnels/professionnelles en thérapie et en évaluation 315 Professionnels/professionnelles en sciences infirmières	Grand groupe 41 PERSONNEL PROFESSIONNEL DES SCIENCES SOCIALES, DE L'ENSEIGNEMENT, DE L'ADMINISTRATION PUBLIQUE ET DE LA RELIGION 411 Juges, avocats/avocates (partout au Canada) et notaires (au Québec) 412 Professeurs/professeures et assistants/ assistantes d'enseignement au niveau universitaire et postsecondaire 413 Enseignants/enseignantes au niveau collégial et dans les écoles de formation professionnelle 414 Enseignants/enseignantes au niveau secondaire, postsecondaire et postuniversitaire et conseillers/ conseillères d'orientation 415 Professionnels/professionnelles en psychologie, en travail social, en conseil, en religion et en probation 416 Agents/agents des politiques et des programmes, recherches et experts-conseils	Grand groupe 51 PERSONNEL PROFESSIONNEL DES ARTS ET DE LA CULTURE 511 Professionnels/professionnelles des musées et galeries d'art 512 Professionnels/professionnelles de la rédaction, de la traduction et des relations publiques 513 Professionnels/professionnelles des arts plastiques et de la scène					
NIVEAU DE COMPÉTENCE C Une formation de niveau secondaire ou une formation spécifique à la profession, ou les deux caractérisent les professions.	Grand groupe 12 PERSONNEL SPÉCIALISÉ EN ADMINISTRATION ET EN TRAVAIL DE BUREAU 121 Personnel supervisant le travail de bureau 122 Personnel administratif et de réglementation 123 Personnel d'administration des finances et des assurances 124 Personnel en secrétariat	Grand groupe 22 PERSONNEL TECHNIQUE RELIÉ AUX SCIENCES NATURELLES ET APPLIQUÉES 221 Personnel technique des sciences physiques 222 Personnel technique des sciences de la vie 223 Personnel technique en génie civil, mécanique et industriel 224 Personnel technique en génie électronique et électrique 225 Personnel technique en architecture, en dessin, en planification et en cartographie 226 Autres contrôleurs/contrôleuses techniques et officiers/officières de réglementation 227 Officiers/officières et contrôleurs/ contrôleuses des services de transport 228 Personnel technique en informatique	Grand groupe 32 PERSONNEL TECHNIQUE ET PERSONNEL SPÉCIALISÉ DU SECTEUR DE LA SANITÉ 321 Technologues et techniciens/techniciennes des sciences de la santé (sauf soins dentaires) 322 Personnel technique en génie civil, mécanique et industriel 323 Personnel technique en soins de santé (sauf soins dentaires)	Grand groupe 42 PERSONNEL PARAPROFESSIONNEL DU DROIT, DES SERVICES SOCIAUX, DE L'ENSEIGNEMENT ET DE LA RELIGION 421 Personnel paraprofessionnel du droit, des services sociaux, de l'enseignement et de la religion, n.c.a.	Grand groupe 52 PERSONNEL TECHNIQUE ET PERSONNEL SPÉCIALE DES ARTS, DE LA CULTURE, DES SPORTS ET DES LOISIRS 521 Professionnels/techniciens en photographie, des archives, des musées et des galeries d'art 522 Professionnels/techniciens en graphisme et personnel de coordination du cinéma, de la radiodiffusion et des arts de la scène 523 Annonceurs/annoncières et autres artistes de spectacle 524 Concepteurs/conceptrices artistiques et artisans-artisanes 525 Athlètes, entraîneurs/entraîneuses, arbitres et personnel assimilé des sports et des loisirs	Grand groupe 62 PERSONNEL SPÉCIALISÉ DE LA VENTE ET DES SERVICES 621 Personnel de supervision des ventes et des services	Grand groupe 72/73 PERSONNEL DES MÉTIERS ET PERSONNEL SPÉCIALISÉ CONDUITE OU MATERIEL DE TRANSPORT ET DE LA MACHINERIE 721 Surveillants/surveillantes de l'exploitation forestière 722 Surveillants/surveillantes du personnel des transports ferroviaires et routier	Grand groupe 82 PERSONNEL SPÉCIALISÉ DU SECTEUR PRIMAIRE 821 Surveillants/surveillantes de l'exploitation forestière 822 Surveillants/surveillantes de l'exploitation des mines, du pétrole et du gaz	Grand groupe 92 PERSONNEL DE SUPERVISION ET PERSONNEL SPÉCIALISÉ DANS LA TRANSFORMATION, LA FABRICATION ET LES SERVICES D'UTILITÉ PUBLIQUE 921 Surveillants/surveillantes dans les usines de transformation 922 Surveillants/surveillantes dans la fabrication et la montagne	
NIVEAU DE COMPÉTENCE D Une formation en cours d'emploi caractérisé habituellement les professions.	Grand groupe 14 PERSONNEL DE BUREAU 141 Commiss au travail général de bureau 142 Commiss en bureautique et en édition 143 Commiss des finances et de l'assurance 144 Commiss de soutien administratif 145 Commiss de bibliothèque, de correspondance et d'information 146 Commiss des services postaux et de messageries 147 Commiss à l'expédition et à la distribution	Grand groupe 34 PERSONNEL DE SOUTIEN DES SERVICES DE SANTÉ 341 Personnel de soutien des services de santé			Grand groupe 64 PERSONNEL INTERMÉDIAIRE DE LA VENTE ET DES SERVICES 641 Représentants/représentantes de ventes – commerce de gros 642 Vendeurs/vendeuses et commerçants/commerçantes-milliards-vendeuses – commerce de détail 643 Personnel de l'hébergement et des voyages 644 Gardes/gardiennes et personnel préposé au jeu dans les casinos 645 Personnel des services des aliments et boissons 646 Personnel des services de protection 647 Personnel de soutien familial et de garde 648 Autre personnel des soins personnalisa	Grand groupe 74 PERSONNEL INTERMÉDIAIRE EN TRANSPORT, EN MACHINERIE, EN INSTALLATION ET EN RÉPARATION 741 Conducteurs/conductrices de véhicules et véhicules de transport de personnes et de marchandises – commerce de gros 742 Vendeurs/vendeuses et commerçants/commerçantes-milliards-vendeuses – commerce de détail 743 Autres conducteurs/conductrices de matériel de transport et personnel assimilé 744 Personnel d'installation, de réparation et d'entretien 745 Débardeurs/débardeuses et manutentionnaires	Grand groupe 84 PERSONNEL INTERMÉDIAIRE DU SECTEUR PRIMAIRE 841 Personnel d'exploitation des mines et du forage des puits de pétrole et de gaz 842 Personnel de l'exploitation forestière 843 Personnel en agriculture et en horticulture 844 Personnel de la pêche, de la chasse et du trappeage	Grand groupe 94/95 PERSONNEL RELIÉ À LA TRANSFORMATION, À LA FABRICATION ET AU MONTAGE 941 Opérateurs/opératrices de machines dans le traitement des métaux et des minerais et du cuivre et du plomb 942 Personnel en agriculture et en horticulture 943 Opérateurs/opératrices de machines dans la fabrication de produits chimiques, du caoutchouc et du plastique et personnel assimilé 944 Opérateurs/opératrices de machines dans la fabrication de produits textiles et personnel assimilé 945 Opérateurs/opératrices de machines dans la transformation des aliments, des boissons et du tabac et personnel assimilé 946 Opérateurs/opératrices de machines dans la transformation des métaux et des minerais et du cuivre et personnel assimilé 947 Opérateurs/opératrices de machines à assembler et personnel assimilé 948 Manuteneuses de matériel mécanique, électrique et électronique 949 Autre personnel de montage et personnel assimilé 951 Opérateurs/opératrices de machines dans le logement et l'usage des métaux et le travail du bois et personnel assimilé	Grand groupe 86 PERSONNEL ÉLÉMENTAIRE DU SECTEUR PRIMAIRE 861 Personnel élémentaire de la production primaire	Grand groupe 96 PERSONNEL ÉLÉMENTAIRE DANS LA TRANSFORMATION, LA FABRICATION ET LES SERVICES D'UTILITÉ PUBLIQUE 961 Manuteneuses dans la transformation, la fabrication et les services d'utilité publique

NATIONAL OCCUPATIONAL CLASSIFICATION 2006



Occupational Descriptions

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NOC UNIT GROUP DESCRIPTIONS

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Classification Structure of the National Occupational Classification for Statistics	A-1
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Preface to Edition 2006 of the *National Occupational Classification (NOC)*

This volume represents the updated version of the *National Occupational Classification* (NOC 2001 Edition), first published in 1992. The NOC 2006 is considered a minor update with no revisions to the classification structure. The changes include the addition of new titles and the modification of descriptive content for certain NOC groups. Some changes were also made to reflect consistency between English and French and to correct errors. The update affected approximately 200 of the 520 NOC unit groups.

The original Introduction to the NOC 2001 is included with this edition, as the structural changes made for the 2001 revision are still in effect. Since then new titles have gained prominence and much of the 2006 update focused on integrating them in the classification. Certain titles that may be classified in many different groups remain problematic. However, with access to increasingly sophisticated search mechanisms, it is expected that some of these titles will be added to the classification in the next revision projected for Census 2011.

Below is a summary of the changes that were made to the English language version of the classification for the 2006 update. For changes to the French, please consult the French language publication. This summary does not identify specific content changes but provides an indication of the magnitude and types of changes that were made.

Summary of Changes for NOC 2006

1. Unit Group Title Changes

NOC	From 2001	To 2006
0513	Recreation and Sports Program and Service Directors	Recreation, Sports and Fitness Program and Service Directors
2173	Software Engineers	Software Engineers and Designers
2281	Computer and Network Operators and Web Technicians	Computer Network Technicians
5254	Program Leaders and Instructors in Recreation and Sport	Program Leaders and Instructors in Recreation, Sport and Fitness
6251	Butchers and Meat Cutters - Retail and Wholesale	Butchers, Meat Cutters and Fishmongers - Retail and Wholesale
7321	Automotive Service Technicians, Truck Mechanics and Mechanical Repairers	Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers

2. Overview of Changes Made to NOC 2006

Review and updates were performed to approximately 150 of the 520 Unit Group descriptions that include the Lead Statement, Main Duties, Employment Requirements, Additional Information and Classified Elsewhere sections. These changes are minor and do not affect data or group boundaries. Some groups listed reflect editorial changes only. The focus was on the following Unit Groups:

NOC	Unit Group Title
1111	Financial Auditors and Accountants
1114	Other Financial Officers
1121	Specialists in Human Resources
1122	Professional Occupations in Business Services to Management
1221	Administrative Officers
1222	Executive Assistants
1223	Personnel and Recruitment Officers
1225	Purchasing Agents and Officers
1231	Bookkeepers
1232	Loan Officers
1241	Secretaries (Except Legal and Medical)
1411	General Office Clerks
1413	Records Management and Filing Clerks
1422	Data Entry Clerks
1423	Desktop Publishing Operators and Related Occupations
1431	Accounting and Related Clerks
1434	Banking, Insurance and Other Financial Clerks
1435	Collectors
1451	Library Clerks
1453	Customer Service, Information and Related Clerks
1454	Survey Interviewers and Statistical Clerks
1472	Storekeepers and Parts Clerks
1475	Dispatchers and Radio Operators
2112	Chemists
2121	Biologists and Related Scientists
2145	Petroleum Engineers
2147	Computer Engineers (Except Software Engineers)
2161	Mathematicians, Statisticians and Actuaries
2171	Information Systems Analysts and Consultants
2172	Database Analysts and Data Administrators
2173	Software Engineers and Designers
2174	Computer Programmers and Interactive Media Developers
2175	Web Designers and Developers
2211	Chemical Technologists and Technicians
2221	Biological Technologists and Technicians
2224	Conservation and Fishery Officers
2232	Mechanical Engineering Technologists and Technicians
2233	Industrial Engineering and Manufacturing Technologists and Technicians
2253	Drafting Technologists and Technicians
2281	Computer Network Technicians
2282	User Support Technicians
2283	Systems Testing Technicians
3132	Dietitians and Nutritionists
3142	Physiotherapists
3144	Other Professional Occupations in Therapy and Assessment
3152	Registered Nurses
3211	Medical Laboratory Technologists and Pathologists' Assistants

- 3212 Medical Laboratory Technicians
- 3213 Veterinary and Animal Health Technologists and Technicians
- 3232 Midwives and Practitioners of Natural Healing
- 3234 Ambulance Attendants and Other Paramedical Occupations
- 3235 Other Technical Occupations in Therapy and Assessment
- 3414 Other Assisting Occupations in Support of Health Services
- 4112 Lawyers and Quebec Notaries
- 4122 Post-Secondary Teaching and Research Assistants
- 4131 College and Other Vocational Instructors
- 4141 Secondary School Teachers
- 4142 Elementary School and Kindergarten Teachers
- 4143 Educational Counsellors
- 4151 Psychologists
- 4153 Family, Marriage and Other Related Counsellors
- 4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers
- 4163 Business Development Officers and Marketing Researchers and Consultants
- 4164 Social Policy Researchers, Consultants and Program Officers
- 4167 Recreation, Sports and Fitness Program Supervisors and Consultants
- 4168 Program Officers Unique to Government
- 4212 Community and Social Service Workers
- 4214 Early Childhood Educators and Assistants
- 4215 Instructors and Teachers of Persons with Disabilities
- 4216 Other Instructors
- 4217 Other Religious Occupations
- 5111 Librarians
- 5112 Conservators and Curators
- 5113 Archivists
- 5124 Professional Occupations in Public Relations and Communications
- 5125 Translators, Terminologists and Interpreters
- 5131 Producers, Directors, Choreographers and Related Occupations
- 5133 Musicians and Singers
- 5211 Library and Archive Technicians and Assistants
- 5212 Technical Occupations Related to Museums and Art Galleries
- 5222 Film and Video Camera Operators
- 5223 Graphic Arts Technicians
- 5226 Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
- 5231 Announcers and Other Broadcasters
- 5232 Other Performers
- 5241 Graphic Designers and Illustrators
- 5243 Theatre, Fashion, Exhibit and Other Creative Designers
- 5244 Artisans and Craftspersons
- 5251 Athletes
- 5252 Coaches
- 5253 Sports Officials and Referees
- 5254 Program Leaders and Instructors in Recreation, Sport and Fitness
- 6211 Retail Trade Supervisors
- 6221 Technical Sales Specialists - Wholesale Trade

6232	Real Estate Agents and Salespersons
6241	Chefs
6242	Cooks
6251	Butchers, Meat Cutters and Fishmongers - Retail and Wholesale
6271	Hairstylists and Barbers
6421	Retail Salespersons and Sales Clerks
6431	Travel Counsellors
6433	Airline Sales and Service Agents
6452	Bartenders
6465	Other Protective Service Occupations
6471	Visiting Homemakers, Housekeepers and Related Occupations
6472	Elementary and Secondary School Teacher Assistants
6474	Babysitters, Nannies and Parents' Helpers
6611	Cashiers
6621	Service Station Attendants
6622	Grocery Clerks and Store Shelf Stockers
6623	Other Elemental Sales Occupations
6641	Food Counter Attendants, Kitchen Helpers and Related Occupations
6651	Security Guards and Related Occupations
6661	Light Duty Cleaners
6662	Specialized Cleaners
6663	Janitors, Caretakers and Building Superintendents
6671	Operators and Attendants in Amusement, Recreation and Sport
6672	Other Attendants in Accommodation and Travel
6683	Other Elemental Service Occupations
7218	Supervisors, Printing and Related Occupations
7221	Supervisors, Railway Transport Operations
7243	Power System Electricians
7244	Electrical Power Line and Cable Workers
7252	Steamfitters, Pipefitters and Sprinkler System Installers
7264	Ironworkers
7271	Carpenters
7295	Floor Covering Installers
7313	Refrigeration and Air Conditioning Mechanics
7321	Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers
7322	Motor Vehicle Body Repairers
7334	Motorcycle and Other Related Mechanics
7335	Other Small Engine and Equipment Mechanics
7351	Stationary Engineers and Auxiliary Equipment Operators
7352	Power Systems and Power Station Operators
7382	Commercial Divers
7383	Other Trades and Related Occupations
7411	Truck Drivers
7413	Taxi and Limousine Drivers and Chauffeurs
7414	Delivery and Courier Service Drivers
7443	Automotive Mechanical Installers and Servicers
7445	Other Repairers and Servicers
7452	Material Handlers

7611	Construction Trades Helpers and Labourers
7612	Other Trades Helpers and Labourers
7621	Public Works and Maintenance Labourers
7622	Railway and Motor Transport Labourers
8231	Underground Production and Development Miners
8232	Oil and Gas Well Drillers, Servicers, Testers and Related Workers
8251	Farmers and Farm Managers
8253	Farm Supervisors and Specialized Livestock Workers
8256	Supervisors, Landscape and Horticulture
8412	Oil and Gas Well Drilling Workers and Services Operators
8422	Silviculture and Forestry Workers
8431	General Farm Workers
8432	Nursery and Greenhouse Workers
8611	Harvesting Labourers
8612	Landscaping and Grounds Maintenance Labourers
8615	Oil and Gas Drilling, Servicing and Related Labourers
8616	Logging and Forestry Labourers
9461	Process Control and Machine Operators, Food and Beverage Processing
9462	Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers
9472	Camera, Platemaking and Other Pre-Press Occupations
9473	Binding and Finishing Machine Operators
9482	Motor Vehicle Assemblers, Inspectors and Testers
9483	Electronics Assemblers, Fabricators, Inspectors and Testers
9485	Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
9511	Machining Tool Operators
9514	Metalworking Machine Operators
9612	Labourers in Metal Fabrication
9617	Labourers in Food, Beverage and Tobacco Processing
9619	Other Labourers in Processing, Manufacturing and Utilities

3. Index of Titles

Modifications and/or additions of new titles, including addition of gender-specific titles were performed in nearly all 520 NOC Unit Groups. There are now:

- 42,813 English job titles (Example and/or Index titles)
- 80,885 French job titles (Example and/or Index titles)

4. Job Titles - Moved from one Unit Group to Another

The following job titles (Example and/or Index titles) moved from one NOC group to another:

From 2001	To 2006	Job Titles
0311	4165	health educator
0511	5112	library curator
0621	6421	florist - retail
0651	0513	fitness centre manager

0651	0513	health spa manager
0651	0513	health studio manager
0651	0513	manager, fitness centre
0721	0513	health club manager
0721	0513	manager, health club
3211	3212	histology technician
4167	5254	personal trainer
4216	4142	tutor - elementary school subjects
6671	8612	campground maintenance worker
6671	8612	maintenance worker, campground

The Introduction to the NOC 2001 Edition follows. It provides information on the classification structure and explanations of NOC concepts and classification criteria. The Skills and Labour Market Information Division within Human Resources and Social Development Canada is responsible for maintenance and further enhancement of the classification system. This is done in collaboration with the Standards Division and the Census Subject Matter Program of Statistics Canada through a joint working group process.

Introduction to Edition 2001 of the National Occupational Classification (NOC)

Background

The *National Occupational Classification* (NOC) is the nationally accepted taxonomy and organizational framework of occupations in the Canadian labour market. It is based on extensive occupational research, analysis and consultation conducted across the country. In the decade since its development the labour market has undergone significant changes. Technological advancement, globalization of the economy and the increasing importance of knowledge in many occupations have all contributed to occupational change. This change has been studied and reflected in a revised edition of the *National Occupational Classification* – NOC 2001.

The NOC is used to compile, analyze and communicate information about occupations. Occupational information is of critical importance for the provision of labour market and career intelligence, skill development, occupational forecasting, labour supply and demand analysis, employment equity and numerous other programs and services. It provides a standardized framework for organizing the world of work in a manageable, understandable and coherent system and has been successfully implemented in a number of major applications over the past decade.

The 2001 edition of the NOC replaces the original publication and the parallel 1991 *Standard Occupational Classification* (SOC) produced by Statistics Canada. The revised SOC is now entitled the *National Occupational Classification for Statistics* (NOC-S). NOC 2001 and the NOC-S fill the gaps that have been identified as shortcomings of the NOC system. These include a missing technical level for information technology occupations, inconsistencies in relation to the statistical structure and the challenges in capturing the emergence of new ways of working and new titles used in the labour market. NOC 2001, while conservative with respect to structural change, reflects the evolution occupations have undergone over the past decade.

Organizational Framework of NOC 2001

The NOC is a three-tiered hierarchical arrangement of occupational groups with successive levels of disaggregation.

26 Major Groups

- Each major group has a unique two-digit code number and is composed of one or more minor groups.

140 Minor Groups

- Each minor group has a unique three-digit code number and is composed of one or more unit groups. The first two digits of this code indicate the major group to which the minor group belongs.

520 Unit Groups

- Each unit group has a unique four-digit code. The first three digits of this code indicate the major and minor groups to which the unit group belongs.

A number of occupational titles are classified within each unit group. All occupational titles classified in the same unit group share the same four-digit unit group code. The title or label of the unit group represents the overall contents of the group.

The NOC revision process also included the revision of the NOC *Index of Titles*. Please refer to the introduction in the *Index of Titles* for details related to this terminological research project.

There are over 30,000 occupational titles included in the revised NOC system. Some titles are clearly occupations, such as *librarian* and *chef*, while others reflect specializations within an occupational area, such as *music librarian* and *pastry chef*. Still others represent a range of jobs, such as *furniture assembler* and *sawmill machine operator*.

These titles are used to describe the work performed by many individuals holding similar jobs within an occupational area. The list of titles in the NOC is not meant to be exhaustive, but attempts to cover the most commonly used and universally understood labels that identify work in the labour market.

The Structural Changes in NOC 2001

A program of research and consultation was carried out for the purposes of this revision exercise. The following table outlines the types of structural changes that have resulted from the revision initiative.

Minor Group Structural Changes

New Minor Groups	
217 Computer and Information Systems Professionals	New – Information technology minor group at the professional skill level.
228 Technical Occupations in Computer and Information Systems	New – Information technology minor group at the technical skill level.

Modified or Deleted Minor Groups	
216 Mathematicians, Statisticians and Actuaries	Modified – Information technology occupations moved to new minor group at professional level.
341 Assisting Occupations in Support of Health Services	Modified – Occupations from former minor group 663 are now included here.
644 Tour and Recreational Guides and Casino Occupations	Modified – Amusement attraction operator occupations moved to minor group 667. – Casino occupations remain here.
663 Elemental Medical and Hospital Assistants	Deleted – Occupations now included in minor group 341.
667 Other Occupations in Travel, Accommodation, Amusement and Recreation	Modified – Amusement attraction operator occupations from minor group 644 are now included here.

Unit Group Structural Changes

New Unit Groups	
2171 Information Systems Analysts and Consultants	New – Information technology group includes some occupations that were classified in former unit group 2162, Computer Systems Analysts.
2172 Database Analysts and Data Administrators	New – Information technology group at the professional skill level.
2173 Software Engineers	New – Includes some occupations that were classified in unit group 2147, Computer Engineers.
2174 Computer Programmers and Interactive Media Developers	New – Includes some occupations that were classified in former unit group 2163, Computer Programmers.
2175 Web Designers and Developers	New – Information technology group at the professional skill level.
2281 Computer and Network Operators and Web Technicians	New – Information technology group at the technical skill level that includes occupations classified in former unit group 1421, Computer Operators.
2282 User Support Technicians	New – Information technology group at the technical skill level.
2283 Systems Testing Technicians	New – Information technology group at the technical skill level.

Modified or Deleted Unit Groups	
0721 Facility Operation and Maintenance Managers	Modified – Now includes occupations from former unit group 0722.
0722 Maintenance Managers	Deleted – Occupations now included in unit group 0721.
1411 General Office Clerks	Modified – Now includes occupations from former unit group 1412.

1412 Typists and Word Processing Operators	Deleted – Occupations now included in unit group 1411.
1421 Computer Operators	Deleted – Occupations now included in new information technology unit group 2281.
2162 Computer Systems Analysts	Deleted – Occupations now included in new minor group 217 for information technology occupations at the professional level.
2163 Computer Programmers	Deleted – Occupations now included in minor group 217.
3223 Dental Technologists, Technicians and Laboratory Bench Workers	Modified – Now includes occupations from former unit group 3412. Was 3220 for statistical purposes.
3412 Dental Laboratory Bench Workers	Deleted – Occupations now included in unit group 3223. Was 3220 for statistical purposes.
3414 Other Assisting Occupations in Support of Health Services	Modified – Now includes occupations from former unit group 6631.
4214 Early Childhood Educators and Assistants	Modified – Now includes occupations from former unit group 6473. Was 6470 for statistical purposes.
6443 Casino Occupations	Modified – Amusement attraction operators, formerly part of this group, now included in unit group 6671.
6473 Early Childhood Educator Assistants	Deleted – Occupations now included in unit group 4214.
6631 Elemental Medical and Hospital Assistants	Deleted – Occupations now included in unit group 3414.
6641 Food Counter Attendants, Kitchen Helpers and Related Occupations	Modified – Now includes occupations from former unit group 6642.
6642 Kitchen and Food Service Helpers	Deleted – Occupations now included in unit group 6641.
6671 Operators and Attendants in Amusement, Recreation and Sport	Modified – Amusement attraction operators, formerly from unit group 6443, now included here. Was 6670 for statistical purposes.

7265 Welders and Related Machine Operators	Modified – Now includes occupations from former unit group 9515. Was 9510 for statistical purposes.
9515 Welding, Brazing and Soldering Machine Operators	Deleted – Occupations now included in unit group 7265.

Changes to Formerly Aggregated Unit Groups for Statistics	
0210 Engineering, Science and Architecture Managers	Deleted – Unit groups 0211, Engineering Managers, and 0212, Architecture and Science Managers, now disaggregated for statistical purposes.
0720 Facility Operation and Maintenance Managers	Deleted – Replaced by 0721, Facility Operation and Maintenance Managers.
2230 Civil Engineering Technologists and Technicians and Construction Estimators	Deleted – Unit groups 2231, Civil Engineers, and 2234, Construction Estimators, now disaggregated for statistical purposes.
3220 Dental Technicians and Laboratory Bench Workers	Deleted – Replaced by 3223, Dental Technologists, Technicians and Laboratory Bench Workers.
4160 Health and Social Policy Researchers, Consultants and Program Officers	Deleted – Unit groups 4164, Social Policy Researchers, Consultants and Program Officers, and 4165, Heath Policy Researchers, Consultants and Program Officers, now disaggregated for statistical purposes.
6470 Early Childhood Educators and Assistants	Deleted – Replaced by 4214, Early Childhood Educators and Assistants.
6670 Amusement Attraction Operators and Other Amusement Occupations	Deleted – Replaced by 6671, Operators and Attendants in Amusement, Recreation and Sport.
9510 Welders and Soldering Machine Operators	Deleted – Replaced by 7265, Welders and Related Machine Operators.

NOC Classification Criteria

The two major attributes of jobs used as classification criteria in developing the NOC are *skill level* and *skill type*. Other factors, such as industry and occupational mobility, are also taken into consideration.

Skill Level

Skill level is defined generally as the amount and type of education and training required to enter and perform the duties of an occupation. In determining skill level, the experience required for entry, and the complexity and responsibilities typical of an occupation are also considered in relation to other occupations.

Four skill level categories are identified in the NOC. Each minor and unit group is assigned to one of the skill levels.

The skill level categories are broad aggregates, reflecting four commonly accepted educational, training or preparatory routes for entering employment. Requirements for individual unit groups or occupations may overlap between the boundaries of the skill levels. For example, some occupations can be entered with either a university degree or a college diploma. When the entry requirements for a unit group or occupation reflect a range of possible educational and training specifications, skill level placement of the group was determined by considering several factors. These include the requirements most generally demanded by employers, the minor group context, complexity of overall responsibilities and knowledge requirements as

well as further training and specialization acquired on the job.

The classification describes the educational and training requirements for *occupations*. However, the education and experience of particular job incumbents may not correspond exactly to the level described. Individuals may be over-qualified for their work or they may work in occupations for which the entry requirements have changed after they became employed.

It is important to note that the skill level categories are not intended to designate socio-economic status or prestige. Rather they are intended to reflect actual occupational entry requirements. These requirements are expressed in terms of the formal educational system and other types of training specified by employers.

Management occupations are not assigned to a skill level category. These occupations span the entire classification structure and are found in all sectors or areas of the labour market. Factors other than education and training (e.g., previous experience, ownership of real property and capital, ownership of intellectual property, inherent decision-making skills and organizational capabilities) are often more significant determinants for employment in management occupations.

The skill level categories of the NOC are outlined and defined in the chart that follows.

NOC SKILL LEVEL CRITERIA		
	EDUCATION/TRAINING	OTHER
SKILL LEVEL A	<ul style="list-style-type: none"> • University degree (bachelor's, master's or doctorate) 	
SKILL LEVEL B	<ul style="list-style-type: none"> • Two to three years of post-secondary education at community college, institute of technology or CÉGEP <i>or</i> • Two to five years of apprenticeship training <i>or</i> • Three to four years of secondary school and more than two years of on-the-job training, occupation-specific training courses or specific work experience 	<ul style="list-style-type: none"> • Occupations with supervisory responsibilities are also assigned to skill level B. • Occupations with significant health and safety responsibilities (e.g., fire fighters, police officers and licensed practical nurses) are assigned to skill level B.
SKILL LEVEL C	<ul style="list-style-type: none"> • One to four years of secondary school education <i>or</i> • Up to two years of on-the-job training, training courses or specific work experience 	
SKILL LEVEL D	<ul style="list-style-type: none"> • Short work demonstration or on-the-job training <i>or</i> • No formal educational requirements 	

Skill Type

Skill type is defined as the type of work performed, although other factors related to skill type are also reflected in the NOC. One of these factors is similarity with respect to the educational discipline or field of study required for entry into an occupation. Another factor is the industry of employment where experience within an internal job ladder or within a specific industry is usually a prerequisite for entry.

Ten broad occupational categories, based on skill type, are identified in the NOC.

0. Management Occupations

This skill type category contains legislators, senior management occupations and middle management occupations.

1. Business, Finance and Administration

This category contains occupations that are concerned with providing financial and business services, administrative and regulatory services and clerical supervision and support services. Some occupations in this category are unique to the financial and business service sectors; however, most are found in all industries.

Often, occupations at skill levels A and B are supplied from educational programs specific to the profession or occupation. Some occupations at skill level B are also supplied from experienced workers in related clerical occupations.

2. Natural and Applied Sciences and Related Occupations

This category contains professional and technical occupations in the sciences, including physical and life sciences, engineering, architecture and information technology.

Occupations in this skill type category require post-secondary education in an appropriate scientific discipline. Progression from occupations in skill level B to occupations in skill level A is not usually possible without completion of additional formal education.

3. Health Occupations

This category includes occupations concerned with providing health care services directly to patients and occupations that provide support to professional and technical staff. Most occupations in this skill type category require post-secondary education in a related health care program. Progression from occupations in skill level B to occupations in skill level A is not usually possible without completion of additional formal education. Occupations in skill level C require short training programs.

4. Occupations in Social Science, Education, Government Service and Religion

This skill type category includes a range of occupations that are concerned with law, teaching, counselling, conducting social science research, developing government policy, and administering government and other programs.

Occupations in this skill type category usually require completion of a related post-secondary program. Progression from occupations in skill level B to occupations in skill level A is not usually possible without completion of additional formal education.

5. Occupations in Art, Culture, Recreation and Sport

This skill type category includes professional and technical occupations related to art and culture, including the performing arts, film and video, broadcasting, journalism, writing, creative design, libraries and museums. It also includes occupations in recreation and sport.

This category is characterized by occupations which are linked by subject matter to formal post-secondary educational programs but which have, for the most part, a range of acceptable qualifications. Occupations in this category are also characterized by a requirement for creative talent, such as for designers and performers, or for athletic ability. Unit groups which contain occupations for which university graduation in a professional discipline is usually required, such as journalism or library science, have been classified in skill level A. Most others have been classified in skill level B in recognition of the wide range of entry routes that are possible.

6. Sales and Service

This skill type category contains sales occupations, personal and protective service occupations and occupations related to the hospitality and tourism industries.

Occupations in skill level B of this category can be linked, for the most part, to formal post-secondary or occupation-specific training programs. Others are characterized by periods of formal on-the-job training other than apprenticeship. Progression from occupations in skill level C or D to those in skill level B usually requires completion of a related training program. Some progression through experience is possible for supervisory positions.

7. Trades, Transport and Equipment Operators and Related Occupations

This skill type category includes construction and mechanical trades, trades supervisors and

contractors and operators of transportation and heavy equipment. These occupations are found in a wide range of industrial sectors, with many occurring in the construction and transportation industries.

This category includes most of the apprenticeable trades, including all of those related to the construction industry. Other occupations in this category usually require completion of college or other programs combined with on-the-job training. Progression to supervisory or self-employed contractor status is possible with experience. There is limited mobility or transferability of skills among occupations in this category due to specific apprenticeship, training and licensing requirements for most occupations.

8. Occupations Unique to Primary Industry

This category contains supervisory and equipment operation occupations in the natural resource-based sectors of mining, oil and gas production, forestry and logging, agriculture, horticulture and fishing. Most occupations in this category are industry specific and do not occur outside of the primary industries.

Occupations within skill level B of this category generally require completion of college or other training programs. Some, however, are characterized by on-the-job training and progression through experience.

9. Occupations Unique to Processing, Manufacturing and Utilities

This category contains supervisory and production occupations in manufacturing, processing and utilities.

Occupations in this category are characterized by internal progression and on-the-job training. Workers typically start out in these occupations at entry-level positions and progress to increasingly higher skilled occupations through experience. Mobility between employers or industries may be limited by seniority provisions of collective agreements. The occupations in skill level B of this category are increasingly technical in nature and post-secondary training programs are available for some.

Industry

Industry and occupation are separate variables which can be cross-tabulated to provide detailed information on employment. However, many occupations are found almost solely within one particular industry. For example, mining and automobile assembly occupations occur each within their respective industrial sectors.

During the research and development of the NOC, it was realized that in many industries, occupational mobility is determined more by internal job ladders than by functional specialization. In consequence, some unit groups include workers of a particular skill level within a specific industry. Although the occupational breakdown resembles in part an industrial breakdown, the variables remain separate and distinct.

Industry was used in the development of classification categories for senior management occupations, for occupations unique to primary industry and for occupations in manufacturing, processing and utilities.

Occupational Mobility

In developing the NOC, an effort was made to consider mobility or transferability of skills between occupations. The objective was to develop unit groups where the potential for mobility or substitution of workers would be greater within the group than between groups. Movement within groups usually follows when the group is homogeneous in skill level and skill type, indicating increased potential for transferability of competencies. Movement between groups usually reflects a change in skill level (e.g., vertical mobility) or a change in skill type (e.g., acquisition of new specialized skills).

The degree of occupational mobility that exists for unit groups varies. Many unit group descriptions include a statement that indicates the potential for, and type of, mobility that characterizes the unit group.

Other Classification Considerations

In addition to the previously mentioned criteria, other factors were considered in determining the boundaries between unit groups and the contents of each group. These additional factors were the

size of the unit groups and the codability or operational feasibility of the groups. Codability relates to the ease of accurately coding or assigning reported job titles from survey respondents to the occupational groups of the classification.

The size (or estimated number of workers) of the unit group was considered for reasons of statistical reliability and confidentiality. Generally, unit groups which contain fewer than 1,000 Canadian workers have not been delineated.

Because the NOC structure is used to code responses to the Census and other surveys, it must provide a set of unit groups that can be used for this operational application. The insufficient precision of some survey responses and ambiguities of language were given consideration in finalizing the unit groups.

The NOC Matrix

A matrix classifying the NOC minor groups has been developed to provide an overview of the entire classification and to show the organization of the groups by both skill level and skill type.

The matrix is found inside the front cover of this publication.

The horizontal rows of the matrix correspond to the four skill level categories. The vertical columns of the matrix correspond to the nine skill type categories. The 10th skill type category, management, is organized across the top of the matrix. Within each cell of the matrix, the minor groups that belong to each skill level and skill type category are listed.

Usually each cell of the matrix constitutes an NOC major group, except for management, which spans all the skill type categories. For example, the seven minor groups listed in the matrix cell for *Skill Level D* and *Sales and Service* combine to form major group 66 – *Elemental Sales and Service Occupations*.

Issues and Conventions of the NOC

Some of the many issues that were encountered in the development of the NOC and the

conventions adopted in response are discussed in the following paragraphs.

Management Occupations

Management occupations present a special problem for reliable coding of occupational survey responses. In many cases there is little indication of the level of responsibility, the size of the enterprise or division managed, or the field of specialization.

To be of practical use, a classification of managers must be a compromise between the theoretically optimal and the practical solutions.

Senior management occupations (in major group 00) have been divided on the basis of industry of employment into five unit groups. The breakdown was originally made according to the *Standard Industrial Classification (SIC)* and was changed in this revision to conform to the *North American Industry Classification System (NAICS)*.

Middle and Other Management Occupations are divided into 16 minor groups and 38 unit groups on the basis of specialization (e.g., *Purchasing Managers*) or industry of employment (e.g., *Postal and Courier Services Managers*). In certain cases (e.g., *Transportation Managers*) groups defined by industry also contain managers in that specialization regardless of their industry of employment. The breakdown by industry corresponds to groups in the NAICS.

Management occupations have not been assigned to a skill level category. It is recognized that there is a range of acceptable educational and training requirements for managerial occupations.

Supervisors

Supervisors and foremen/women have generally been classified in skill level B.

In most cases, professional and technical occupations are supervised by managerial or professional personnel respectively. However, where supervisors are identified for professional and technical groups, they are generally classified in the same unit groups as the occupations supervised.

Supervisors in the following occupational categories have been classified in supervisor unit groups or minor groups separate from the workers supervised:

- clerical and administrative occupations
- nursing occupations
- sales and service occupations
- trades and transport and equipment operators
- occupations in primary industry
- occupations unique to processing, manufacturing and utilities.

Most minor and unit groups in the occupational categories listed above have a corresponding supervisory group. Occasionally, as in minor group 626 *Police Officers and Firefighters*, supervision is provided by managers and there is no corresponding supervisory group in major group 62.

Trades

All apprenticeable trades are included in skill level B. Their inclusion does not imply an exact equivalence of skill between all trades, but rather that they occupy a range that lies within the boundaries of this skill level category.

Information on entry requirements is provided within each unit group description.

Inspectors, Testers and Graders

Generally, inspectors who require post-secondary education have been classified in separate unit groups in skill level B or with technicians and technologists, also in skill level B. Other non-technical inspectors, testers, graders and samplers have been included either in separate unit groups covering occupations in processing industries or in unit groups of assemblers and fabricators in manufacturing industries. This is reflective of patterns of employment found within industries and the increasing responsibility for quality control that is placed on manufacturing production workers.

Apprentices and Trainees

Apprentices and trainees have been classified in the same unit groups as the occupations for which they are training. Similarly, interns, residents and articling students are classified with their respective professional groups.

This convention has been adopted of necessity to prevent a proliferation of unit groups of apprentices. It is not intended to imply equivalence or interchangeability of apprentices or trainees with fully qualified workers.

NOC Coding System

One of the features of the *National Occupational Classification* is its system of codes. Each major group, minor group and unit group has its own unique code.

A two-digit code is assigned at the major group level. A third digit is added at the minor group level and a fourth digit is added at the unit group level.

Major Group 31 – Professional Occupations in Health

Minor Group 314 – Professional Occupations in Therapy and Assessment

Unit Group 3142 – Physiotherapists

The first two digits of each code convey meaning with respect to the group's skill type and skill level category.

For all non-management occupations, the **first digit** of each code identifies the major, minor and unit group as belonging to one of the **skill type** categories.

Similarly, for all non-management occupations, the **second digit** of each code identifies the major, minor and unit group as belonging to one of the four **skill level** categories.

For management occupations, the first two digits also convey meaning. The first digit is always **0** to convey management, while the second digit conveys the skill type category where the management occupation is found.

The following charts summarize and illustrate the meanings embedded in the coding system.

When the first digit is...

- | | |
|---|---|
| 1 | Business, Finance and Administration Occupations |
| 2 | Natural and Applied Sciences and Related Occupations |
| 3 | Health Occupations |
| 4 | Occupations in Social Science, Education, Government Service and Religion |
| 5 | Occupations in Art, Culture, Recreation and Sport |
| 6 | Sales and Service Occupations |
| 7 | Trades, Transport and Equipment Operators and Related Occupations |
| 8 | Occupations Unique to Primary Industry |
| 9 | Occupations Unique to Processing, Manufacturing and Utilities |

When the second digit is...

- | | |
|--------|---|
| 1 | Skill Level A (Professional Occupations) |
| 2 or 3 | Skill Level B (Technical, Paraprofessional and Skilled Occupations) |
| 4 or 5 | Skill Level C (Intermediate Occupations) |
| 6 | Skill Level D (Labouring and Elemental Occupations) |

Important Note:

This applies to all occupations except management occupations. For management, the first digit is always 0 and the second digit represents the skill type categories, from 1 to 9, as above.

Examples of Codes and their Meaning

9231

The first digit indicates skill type category 9
Occupations Unique to Processing, Manufacturing and Utilities

The second digit indicates skill level category B

6443

The first digit indicates skill type category 6
Sales and Service Occupations

The second digit indicates skill level category C

0212

The first digit 0 always indicates a management occupation

The second digit indicates skill type category 2
Natural and Applied Sciences and Related Occupations

Format of Unit Group Descriptions

Each NOC unit group description consists of several standardized sections which define and describe its content.

Lead statement

This section provides a general description of the content and boundaries of the unit group and indicates the main activities of occupations within the unit group. It also indicates the kinds of industries or establishments in which the occupations are found. The list of places of employment is not always exhaustive, but can assist in clarifying the occupations described and in differentiating them from occupations found in other groups.

Examples of titles classified in this unit group

This section is a list of titles commonly used in the labour market. The titles are intended to illustrate the contents and range of the occupational group. This is not an exhaustive list of titles; additional occupational titles are included in the alphabetical *Index of Titles*.

Main duties

This section describes the main duties of occupations in the unit group. Depending on the contents of the unit group, one of three formats was selected for describing main duties.

- A series of statements that can be applied to all occupations in the unit group. This format was selected for unit groups that contain a single core occupation, such as 2146

- Aerospace Engineers and 1242 Legal Secretaries.* This format was also selected for unit groups that contain a range of related titles that nevertheless share a set of common duties, such as 9512 *Forging Machine Operators* and 1441 *Administrative Clerks*.
- Two or more sub-sets of occupations with a series of statements that apply to each component. This format was selected for unit groups that consist of two or more sub-components which, while similar enough to be in the same unit group, can be described separately. Examples of unit groups with this format are 3141 *Audiologists and Speech-Language Pathologists* and 5125 *Translators, Terminologists and Interpreters*.
 - A series of brief descriptive statements that are linked to specific occupations within a group. This format was selected for unit groups that contain a series of occupations which, while similar enough to be in the same unit group, can be described separately. Examples of unit groups with this format include 6463 *By-law Enforcement and Other Regulatory Officers, n.e.c.* and 5226 *Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts*.

For some unit groups, a statement appears in italics at the end of the main duties section. This identifies specializations that exist within the occupational area encompassed by the unit group.

Employment requirements

This section describes the employment requirements for the unit group. Several types of requirements are identified in this section and are listed in the following order.

- Type and level of formal education (for example, secondary school, college diploma, university degree). Efforts were made to be as specific as possible, though many unit groups have a range of acceptable educational requirements.
- Specific training (for example, apprenticeship training, on-the-job training, occupation-specific training courses)

- Experience in another occupation (for example, supervisors usually require several years of experience in the occupation that they supervise)
- Licences, certificates or registration
- Other requirements (for example, athletic ability or artistic talent)

This section does not attempt to describe personal suitability requirements that are assessed by employers as part of the hiring process.

Some occupations have very definite employment requirements while for others, there is no consensus or there may exist a range of acceptable requirements. To reflect this variation in the labour market, this section describes employment requirements using the following terminology:

- “... is required” (to indicate a definite requirement);
- “...is usually required” (to indicate something that is usually required by the majority of employers, but not always required by all employers); and
- “... may be required” (to indicate something that may be required by some employers, but on a less frequent basis).

Note: For reasons of brevity, in this section the term college includes the following types of post-secondary institutions: community colleges, CÉGEPs, technical institutes, trade schools and agricultural colleges. In some provinces it may also include private training organizations, music conservatories and other non-degree granting institutions.

Additional information

This section appears in some unit group descriptions. It provides information on the following:

- progression to other occupations (such as supervisory or management positions);
- mobility patterns (for example, identifying occupations that are part of internal lines of progression);
- trends and forthcoming changes in the unit group’s employment requirements; and

- other information to clarify and define the unit group.

Classified elsewhere

This section clarifies the boundaries of the unit group by identifying other unit groups or related occupations that are classified elsewhere. Unit groups or individual occupations are cited in this section when they bear a functional similarity to the unit group or when similar titles occur.

Career Development Version of the NOC

The *Career Handbook* is the counselling version of the NOC that is used by career, educational and employment counselling professionals, vocational rehabilitation specialists and a wide range of other users. It is used primarily for career exploration and development purposes and provides a basis for facilitating informed career decision-making. The *Career Handbook* is also the foundation for many career development products and resources.

The *Career Handbook* includes ratings on occupational descriptor scales such as aptitudes, interests, functional data/people/things activities, physical activities, environmental conditions and education/training indicators. Descriptor profiles, based on these ratings, provide the linkage between occupations and worker characteristics. This information is of critical importance in the areas of skill development and career planning.

Relationship between NOC 2001 and the National Occupational Classification for Statistics

The NOC forms the basis of the NOC-S which is used by Statistics Canada to collect and report data on occupations from the Census and other surveys.

The revision exercise had as one of its objectives a further streamlining of the classification to unify and eliminate previous differences. A Statistics Canada and HRDC joint working committee was established to achieve consensus on discrepancies between the two publications. The revisions have led to an improved classification structure from the perspectives of both departments. The areas outlined below indicate differences that still exist primarily due

to the operational conventions to which Statistics Canada must adhere.

The NOC and the NOC-S differ in their classification of military personnel. The NOC unit groups for military occupations (0643 *Commissioned Officers, Armed Forces* and 6464 *Occupations Unique to the Armed Forces*) are defined to include only those military personnel whose occupations do not have a civilian counterpart (e.g., infantry officers, artillery soldiers). Those military personnel whose occupations do have a civilian counterpart are classified in the unit group appropriate to the occupation (e.g., dental officers are classified with dentists and military police officers are classified with police officers). On the other hand, all military personnel, regardless of whether their occupations have civilian counterparts, are classified to the corresponding NOC-S unit groups: *Commissioned Officers, Armed Forces* or *Other Ranks, Armed Forces*.

The minor groups and broad occupational categories of the NOC-S are the same as those of the NOC, except to the extent of the variations created by the differences in the treatment of the military.

The major group level of the NOC-S structure represents an alternate statistical aggregation of the NOC and consists of 47 major groups based on skill type. The table that follows identifies the NOC major groups and the corresponding NOC-S major groups. This alternate aggregation enables the statistical balancing of proportions of the labour force where additional division of the NOC two-digit groups is possible due to population sizes. It is important to note that the NOC and NOC-S are identical at the unit group and minor group levels.

Statistics Canada has implemented a two-part numbering system in its publication to link the statistical aggregation to the NOC codes. The first part of the numbering system indicates the placement of the minor and unit groups within the NOC-S aggregation structure, and the second part of the numbering system, following a decimal point, represents the NOC code. This two-part numbering system allows users to relate data produced by Statistics Canada to the minor and unit groups of the NOC. The NOC and the

NOC-S represent one classification framework for measuring economic activity in the Canadian labour market and for providing information about the work of Canadians.

The structure of the NOC-S is found in the Appendix of this publication. Further information about the NOC-S can be obtained from:

Standards Division
Statistics Canada
Jean Talon Building
170 Tunney's Pasture Driveway
Ottawa, Ontario
K1A 0T6

Phone: 613-951-2923
Fax: 613-951-8578
Internet:
www.statcan.ca/english/concepts/occupation.htm

Skill Type Categories and Major Groups of the NOC		Broad Occupational Categories and Major Groups of the NOC-S
NOC	NOC-S	
MANAGEMENT OCCUPATIONS		
00 Senior Management Occupations 01-09 Middle and Other Management Occupations	A0 Senior Management Occupations A1 Specialist Managers A2 Managers in Retail Trade, Food and Accommodation Services A3 Other Managers n.e.c.	
BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS		
11 Professional Occupations in Business and Finance 12 Skilled Administrative and Business Occupations 14 Clerical Occupations	B0 Professional Occupations in Business and Finance B1 Finance and Insurance Administrative Occupations B2 Secretaries B3 Administrative and Regulatory Occupations B4 Clerical Supervisors B5 Clerical Occupations	
NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS		
21 Professional Occupations in Natural and Applied Sciences 22 Technical Occupations Related to Natural and Applied Sciences	C0 Professional Occupations in Natural and Applied Sciences C1 Technical Occupations Related to Natural and Applied Sciences	
HEALTH OCCUPATIONS		
31 Professional Occupations in Health 32 Technical and Skilled Occupations in Health 34 Assisting Occupations in Support of Health Services	D0 Professional Occupations in Health D1 Nurse Supervisors and Registered Nurses D2 Technical and Related Occupations in Health D3 Assisting Occupations in Support of Health Services	

NOC	NOC-S
OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION	
41 Professional Occupations in Social Science, Education, Government Services and Religion	E0 Judges, Lawyers, Psychologists, Social Workers, Ministers of Religion, and Policy and Program Officers
42 Paraprofessional Occupations in Law, Social Services, Education and Religion	E1 Teachers and Professors E2 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.
OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	
51 Professional Occupations in Art and Culture	F0 Professional Occupations in Art and Culture
52 Technical and Skilled Occupations in Art, Culture, Recreation and Sport	F1 Technical Occupations in Art, Culture, Recreation and Sport
SALES AND SERVICE OCCUPATIONS	
62 Skilled Sales and Service Occupations	G0 Sales and Service Supervisors
64 Intermediate Sales and Service Occupations	G1 Wholesale, Technical, Insurance, Real Estate Sales Specialists, and Retail, Wholesale and Grain Buyers
66 Elemental Sales and Service Occupations	G2 Retail Salespersons and Sales Clerks G3 Cashiers G4 Chefs and Cooks G5 Occupations in Food and Beverage Service G6 Occupations in Protective Services G7 Occupations in Travel and Accommodation including Attendants in Recreation and Sport G8 Childcare and Home Support Workers G9 Sales and Service Occupations n.e.c.

NOC	NOC-S
TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS	
72/73 Trades and Skilled Transport and Equipment Operators	H0 Contractors and Supervisors in Trades and Transportation
74 Intermediate Occupations in Transport, Equipment Operation, Installation and Maintenance	H1 Construction Trades
76 Trades Helpers, Construction Labourers and Related Occupations	H2 Stationary Engineers, Power Station Operators and Electrical Trades and Telecommunications Occupations
	H3 Machinists, Metal Forming, Shaping and Erecting Occupations
	H4 Mechanics
	H5 Other Trades n.e.c.
	H6 Heavy Equipment and Crane Operators including Drillers
	H7 Transportation Equipment Operators and Related Workers, excluding Labourers
	H8 Trades Helpers, Construction and Transportation Labourers and Related Occupations

OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY	
82 Skilled Occupations in Primary Industry	I0 Occupations Unique to Agriculture excluding Labourers
84 Intermediate Occupations in Primary Industry	I1 Occupations Unique to Forestry Operations, Mining, Oil and Gas Extraction, and Fishing, excluding Labourers
86 Labourers in Primary Industry	I2 Primary Production Labourers

OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES	
92 Processing, Manufacturing and Utilities Supervisors and Skilled Operators	J0 Supervisors in Manufacturing
94/95 Processing and Manufacturing Machine Operators and Assemblers	J1 Machine Operators in Manufacturing
96 Labourers in Processing, Manufacturing and Utilities	J2 Assemblers in Manufacturing
	J3 Labourers in Processing, Manufacturing and Utilities

Note: The NOC-S major groups reflect the alternate statistical aggregation of the NOC unit groups.

NOC Research and Development

The following section outlines the methods and procedures that were implemented to revise the NOC. For further details on the research undertaken for the initial development of the NOC, readers may refer to the Introduction to the previous edition.

Methodology

Research on occupational evolution, work skills and competencies has been ongoing since the implementation of the NOC in the early 1990s. A large contributing factor to the research has been the input from public and private sector users identifying particular occupational areas that required additional analysis. The changes in some of these occupational areas were significant enough to require modifications to the structure of the classification system itself.

Research analysts were assigned responsibility for particular NOC skill type categories, including management occupations. Based on input from a wide range of sources that included labour market analysts, sector councils, immigration specialists, counsellors and professional organizations, the analysts determined the depth of investigation required for their assigned occupational areas.

A multifaceted approach to research was established to make use of the large amount of material that had been collected since the implementation of the NOC. Analysts consulted documents that included secondary sources, such as sector studies, occupational analyses, occupational standards and research papers and articles. Data from other sources, such as a survey of entry requirements for regulated professions and trades, Essential Skills research, the Census and the Labour Force Survey, were also consulted.

Analysts determined the extent of research required for their particular areas of responsibility. For many occupations, validation of the original NOC information indicated that

there was general satisfaction with the content of the occupational groups and their placement within the overall classification structure. For other groups the information in the main duties and employment requirements sections required significant updating. Internet-based research, data from secondary sources and interviews with key occupational specialists provided the basis for the proposed revisions in these areas. Revisions were verified with occupational contacts.

A few occupational areas of the economy had undergone significant restructuring or modification. In-depth research was necessary to examine both the content and the positioning of these occupations in the classification structure to reflect more accurately the reality of the current labour market. These areas included information technology occupations, call centre services, electronic commerce, clerical work, health care support, recycling and manufacturing. The impact of technology on work in many occupational areas such as telecommunications, new or interactive media, publishing, and computer-controlled machining operations in industry, was also studied. Research projects and surveys were conducted by academics, private research consultants and firms, divisions within Statistics Canada and in conjunction with large research initiatives undertaken by some sector council organizations.

Procedures

Following the analysis of research findings, the compilation of information from other sources and its incorporation in a standardized NOC revision format, the work was submitted to an internal HRDC review committee for approval. The proposed revisions were then forwarded to Statistics Canada for internal review to assess implementation concerns related to coding, structural consistency and other statistical considerations. The joint working committee met to discuss identified issues and to achieve consensus on final decisions.

Contact Information

For further information about the *National Occupational Classification* and related occupational systems, contact:

Skills and Labour Market Information Division
Workplace Partnerships Directorate
Human Resources and Social Development
Canada
140 Promenade du Portage
Phase IV, 4th Floor
Gatineau, Quebec
K1A 0J9

Phone: 819-934-8451

Fax: 819-997-9256

Internet: <http://www.hrsdc.gc.ca/noc>

NOC Major Group Structure

- 00 Senior Management Occupations
- 01-09 Middle and Other Management Occupations
- 11 Professional Occupations in Business and Finance
- 12 Skilled Administrative and Business Occupations
- 14 Clerical Occupations
- 21 Professional Occupations in Natural and Applied Sciences
- 22 Technical Occupations Related to Natural and Applied Sciences
- 31 Professional Occupations in Health
- 32 Technical and Skilled Occupations in Health
- 34 Assisting Occupations in Support of Health Services
- 41 Professional Occupations in Social Science, Education, Government Services and Religion
- 42 Paraprofessional Occupations in Law, Social Services, Education and Religion
- 51 Professional Occupations in Art and Culture
- 52 Technical and Skilled Occupations in Art, Culture, Recreation and Sport
- 62 Skilled Sales and Service Occupations
- 64 Intermediate Sales and Service Occupations
- 66 Elemental Sales and Service Occupations
- 72/73 Trades and Skilled Transport and Equipment Operators
- 74 Intermediate Occupations in Transport, Equipment Operation, Installation and Maintenance
- 76 Trades Helpers, Construction Labourers and Related Occupations
- 82 Skilled Occupations in Primary Industry
- 84 Intermediate Occupations in Primary Industry
- 86 Labourers in Primary Industry
- 92 Processing, Manufacturing and Utilities Supervisors and Skilled Operators
- 94/95 Processing and Manufacturing Machine Operators and Assemblers
- 96 Labourers in Processing, Manufacturing and Utilities

NOC Major and Minor Group Structure

MANAGEMENT OCCUPATIONS

Major Group 00

SENIOR MANAGEMENT OCCUPATIONS

- 001 Legislators and Senior Management

Major Group 01-09

MIDDLE AND OTHER MANAGEMENT OCCUPATIONS

- 011 Administrative Services Managers
- 012 Managers in Financial and Business Services
- 013 Managers in Communication (Except Broadcasting)
- 021 Managers in Engineering, Architecture, Science and Information Systems
- 031 Managers in Health, Education, Social and Community Services
- 041 Managers in Public Administration
- 051 Managers in Art, Culture, Recreation and Sport
- 061 Sales, Marketing and Advertising Managers
- 062 Managers in Retail Trade
- 063 Managers in Food Service and Accommodation
- 064 Managers in Protective Service
- 065 Managers in Other Services
- 071 Managers in Construction and Transportation
- 072 Facility Operation and Maintenance Managers
- 081 Managers in Primary Production (Except Agriculture)
- 091 Managers in Manufacturing and Utilities

BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS

Major Group 11

PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE

- 111 Auditors, Accountants and Investment Professionals
- 112 Human Resources and Business Service Professionals

Major Group 12

SKILLED ADMINISTRATIVE AND BUSINESS OCCUPATIONS

- 121 Clerical Supervisors
- 122 Administrative and Regulatory Occupations
- 123 Finance and Insurance Administrative Occupations
- 124 Secretaries, Recorders and Transcriptionists

Major Group 14**CLERICAL OCCUPATIONS**

- 141 Clerical Occupations, General Office Skills
- 142 Office Equipment Operators
- 143 Finance and Insurance Clerks
- 144 Administrative Support Clerks
- 145 Library, Correspondence and Related Information Clerks
- 146 Mail and Message Distribution Occupations
- 147 Recording, Scheduling and Distributing Occupations

NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS**Major Group 21****PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES**

- 211 Physical Science Professionals
- 212 Life Science Professionals
- 213 Civil, Mechanical, Electrical and Chemical Engineers
- 214 Other Engineers
- 215 Architects, Urban Planners and Land Surveyors
- 216 Mathematicians, Statisticians and Actuaries
- 217 Computer and Information Systems Professionals

Major Group 22**TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES**

- 221 Technical Occupations in Physical Sciences
- 222 Technical Occupations in Life Sciences
- 223 Technical Occupations in Civil, Mechanical and Industrial Engineering
- 224 Technical Occupations in Electronics and Electrical Engineering
- 225 Technical Occupations in Architecture, Drafting, Surveying and Mapping
- 226 Other Technical Inspectors and Regulatory Officers
- 227 Transportation Officers and Controllers
- 228 Technical Occupations in Computer and Information Systems

HEALTH OCCUPATIONS**Major Group 31****PROFESSIONAL OCCUPATIONS IN HEALTH**

- 311 Physicians, Dentists and Veterinarians
- 312 Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals
- 313 Pharmacists, Dietitians and Nutritionists
- 314 Therapy and Assessment Professionals
- 315 Nurse Supervisors and Registered Nurses

Major Group 32**TECHNICAL AND SKILLED OCCUPATIONS IN HEALTH**

- 321 Medical Technologists and Technicians (Except Dental Health)
- 322 Technical Occupations in Dental Health Care
- 323 Other Technical Occupations in Health Care (Except Dental)

Major Group 34**ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES**

- 341 Assisting Occupations in Support of Health Services

OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION**Major Group 41****PROFESSIONAL OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICES AND RELIGION**

- 411 Judges, Lawyers and Quebec Notaries
- 412 University Professors and Assistants
- 413 College and Other Vocational Instructors
- 414 Secondary and Elementary School Teachers and Educational Counsellors
- 415 Psychologists, Social Workers, Counsellors, Clergy and Probation Officers
- 416 Policy and Program Officers, Researchers and Consultants

Major Group 42**PARAPROFESSIONAL OCCUPATIONS IN LAW, SOCIAL SERVICES, EDUCATION AND RELIGION**

- 421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.*

OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT**Major Group 51****PROFESSIONAL OCCUPATIONS IN ART AND CULTURE**

- 511 Librarians, Archivists, Conservators and Curators
- 512 Writing, Translating and Public Relations Professionals
- 513 Creative and Performing Artists

* n.e.c = not elsewhere classified

Major Group 52**TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT**

- 521 Technical Occupations in Libraries, Archives, Museums and Art Galleries
- 522 Photographers, Graphic Arts Technicians and Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
- 523 Announcers and Other Performers
- 524 Creative Designers and Craftspersons
- 525 Athletes, Coaches, Referees and Related Occupations

SALES AND SERVICE OCCUPATIONS**Major Group 62****SKILLED SALES AND SERVICE OCCUPATIONS**

- 621 Sales and Service Supervisors
- 622 Technical Sales Specialists, Wholesale Trade
- 623 Insurance and Real Estate Sales Occupations and Buyers
- 624 Chefs and Cooks
- 625 Butchers and Bakers
- 626 Police Officers and Firefighters
- 627 Technical Occupations in Personal Service

Major Group 64**INTERMEDIATE SALES AND SERVICE OCCUPATIONS**

- 641 Sales Representatives, Wholesale Trade
- 642 Retail Salespersons and Sales Clerks
- 643 Occupations in Travel and Accommodation
- 644 Tour and Recreational Guides and Casino Occupations
- 645 Occupations in Food and Beverage Service
- 646 Other Occupations in Protective Service
- 647 Childcare and Home Support Workers
- 648 Other Occupations in Personal Service

Major Group 66**ELEMENTAL SALES AND SERVICE OCCUPATIONS**

- 661 Cashiers
- 662 Other Sales and Related Occupations
- 664 Food Counter Attendants, Kitchen Helpers and Related Occupations
- 665 Security Guards and Related Occupations
- 666 Cleaners
- 667 Other Occupations in Travel, Accommodation, Amusement and Recreation
- 668 Other Elemental Service Occupations

TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS

Major Group 72/73

TRADES AND SKILLED TRANSPORT AND EQUIPMENT OPERATORS

- 721 Contractors and Supervisors, Trades and Related Workers
- 722 Supervisors, Railway and Motor Transportation Occupations
- 723 Machinists and Related Occupations
- 724 Electrical Trades and Telecommunication Occupations
- 725 Plumbers, Pipefitters and Gas Fitters
- 726 Metal Forming, Shaping and Erecting Trades
- 727 Carpenters and Cabinetmakers
- 728 Masonry and Plastering Trades
- 729 Other Construction Trades
- 731 Machinery and Transportation Equipment Mechanics (Except Motor Vehicle)
- 732 Automotive Service Technicians
- 733 Other Mechanics
- 734 Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations
- 735 Stationary Engineers and Power Station and System Operators
- 736 Train Crew Operating Occupations
- 737 Crane Operators, Drillers and Blasters
- 738 Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.

Major Group 74

INTERMEDIATE OCCUPATIONS IN TRANSPORT, EQUIPMENT OPERATION, INSTALLATION AND MAINTENANCE

- 741 Motor Vehicle and Transit Drivers
- 742 Heavy Equipment Operators
- 743 Other Transport Equipment Operators and Related Workers
- 744 Other Installers, Repairers and Servicers
- 745 Longshore Workers and Material Handlers

Major Group 76

TRADES HELPERS, CONSTRUCTION LABOURERS AND RELATED OCCUPATIONS

- 761 Trades Helpers and Labourers
- 762 Public Works and Other Labourers, n.e.c.

OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY

Major Group 82

SKILLED OCCUPATIONS IN PRIMARY INDUSTRY

- 821 Supervisors, Logging and Forestry
- 822 Supervisors, Mining, Oil and Gas
- 823 Underground Miners, Oil and Gas Drillers and Related Workers
- 824 Logging Machinery Operators
- 825 Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture
- 826 Fishing Vessel Masters and Skippers and Fishermen/women

Major Group 84

INTERMEDIATE OCCUPATIONS IN PRIMARY INDUSTRY

- 841 Mine Service Workers and Operators in Oil and Gas Drilling
- 842 Logging and Forestry Workers
- 843 Agriculture and Horticulture Workers
- 844 Other Fishing and Trapping Occupations

Major Group 86

LABOURERS IN PRIMARY INDUSTRY

- 861 Primary Production Labourers

OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES

Major Group 92

PROCESSING, MANUFACTURING AND UTILITIES SUPERVISORS AND SKILLED OPERATORS

- 921 Supervisors, Processing Occupations
- 922 Supervisors, Assembly and Fabrication
- 923 Central Control and Process Operators in Manufacturing and Processing

Major Group 94/95

PROCESSING AND MANUFACTURING MACHINE OPERATORS AND ASSEMBLERS

- 941 Machine Operators and Related Workers in Metal and Mineral Products Processing
- 942 Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing
- 943 Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing
- 944 Machine Operators and Related Workers in Textile Processing
- 945 Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing
- 946 Machine Operators and Related Workers in Food, Beverage and Tobacco Processing
- 947 Printing Machine Operators and Related Occupations
- 948 Mechanical, Electrical and Electronics Assemblers
- 949 Other Assembly and Related Occupations
- 951 Machining, Metalworking, Woodworking and Related Machine Operators

Major Group 96

LABOURERS IN PROCESSING, MANUFACTURING AND UTILITIES

- 961 Labourers in Processing, Manufacturing and Utilities

NOC Major, Minor and Unit Group Structure

MANAGEMENT OCCUPATIONS

Major Group 00

SENIOR MANAGEMENT OCCUPATIONS

001 Legislators and Senior Management

- 0011 Legislators
- 0012 Senior Government Managers and Officials
- 0013 Senior Managers - Financial, Communications and Other Business Services
- 0014 Senior Managers - Health, Education, Social and Community Services and Membership Organizations
- 0015 Senior Managers - Trade, Broadcasting and Other Services, n.e.c.*
- 0016 Senior Managers - Goods Production, Utilities, Transportation and Construction

Major Group 01-09

MIDDLE AND OTHER MANAGEMENT OCCUPATIONS

011 Administrative Services Managers

- 0111 Financial Managers
- 0112 Human Resources Managers
- 0113 Purchasing Managers
- 0114 Other Administrative Services Managers

012 Managers in Financial and Business Services

- 0121 Insurance, Real Estate and Financial Brokerage Managers
- 0122 Banking, Credit and Other Investment Managers
- 0123 Other Business Services Managers

013 Managers in Communication (Except Broadcasting)

- 0131 Telecommunication Carriers Managers
- 0132 Postal and Courier Services Managers

021 Managers in Engineering, Architecture, Science and Information Systems

- 0211 Engineering Managers
- 0212 Architecture and Science Managers
- 0213 Computer and Information Systems Managers

031 Managers in Health, Education, Social and Community Services

- 0311 Managers in Health Care
- 0312 Administrators - Post-Secondary Education and Vocational Training
- 0313 School Principals and Administrators of Elementary and Secondary Education
- 0314 Managers in Social, Community and Correctional Services

041 Managers in Public Administration

- 0411 Government Managers - Health and Social Policy Development and Program Administration
- 0412 Government Managers - Economic Analysis, Policy Development and Program Administration
- 0413 Government Managers - Education Policy Development and Program Administration
- 0414 Other Managers in Public Administration

051 Managers in Art, Culture, Recreation and Sport

- 0511 Library, Archive, Museum and Art Gallery Managers
- 0512 Managers - Publishing, Motion Pictures, Broadcasting and Performing Arts
- 0513 Recreation, Sports and Fitness Program and Service Directors

061 Sales, Marketing and Advertising Managers

- 0611 Sales, Marketing and Advertising Managers

062 Managers in Retail Trade

- 0621 Retail Trade Managers

063 Managers in Food Service and Accommodation

- 0631 Restaurant and Food Service Managers
- 0632 Accommodation Service Managers

064 Managers in Protective Service

- 0641 Commissioned Police Officers
- 0642 Fire Chiefs and Senior Firefighting Officers
- 0643 Commissioned Officers, Armed Forces

065 Managers in Other Services

- 0651 Other Services Managers

071 Managers in Construction and Transportation

- 0711 Construction Managers
- 0712 Residential Home Builders and Renovators
- 0713 Transportation Managers

072 Facility Operation and Maintenance Managers

0721 Facility Operation and Maintenance Managers

081 Managers in Primary Production (Except Agriculture)

0811 Primary Production Managers (Except Agriculture)

091 Managers in Manufacturing and Utilities

0911 Manufacturing Managers

0912 Utilities Managers

BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS**Major Group 11****PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE****111 Auditors, Accountants and Investment Professionals**

1111 Financial Auditors and Accountants

1112 Financial and Investment Analysts

1113 Securities Agents, Investment Dealers and Brokers

1114 Other Financial Officers

112 Human Resources and Business Service Professionals

1121 Specialists in Human Resources

1122 Professional Occupations in Business Services to Management

Major Group 12**SKILLED ADMINISTRATIVE AND BUSINESS OCCUPATIONS****121 Clerical Supervisors**

1211 Supervisors, General Office and Administrative Support Clerks

1212 Supervisors, Finance and Insurance Clerks

1213 Supervisors, Library, Correspondence and Related Information Clerks

1214 Supervisors, Mail and Message Distribution Occupations

1215 Supervisors, Recording, Distributing and Scheduling Occupations

122 Administrative and Regulatory Occupations

1221 Administrative Officers

1222 Executive Assistants

1223 Personnel and Recruitment Officers

1224 Property Administrators

1225 Purchasing Agents and Officers

1226 Conference and Event Planners

1227 Court Officers and Justices of the Peace

1228 Immigration, Employment Insurance and Revenue Officers

123 Finance and Insurance Administrative Occupations

- 1231 Bookkeepers
- 1232 Loan Officers
- 1233 Insurance Adjusters and Claims Examiners
- 1234 Insurance Underwriters
- 1235 Assessors, Valuators and Appraisers
- 1236 Customs, Ship and Other Brokers

124 Secretaries, Recorders and Transcriptionists

- 1241 Secretaries (Except Legal and Medical)
- 1242 Legal Secretaries
- 1243 Medical Secretaries
- 1244 Court Recorders and Medical Transcriptionists

Major Group 14

CLERICAL OCCUPATIONS**141 Clerical Occupations, General Office Skills**

- 1411 General Office Clerks
- 1413 Records Management and Filing Clerks
- 1414 Receptionists and Switchboard Operators

142 Office Equipment Operators

- 1422 Data Entry Clerks
- 1423 Desktop Publishing Operators and Related Occupations
- 1424 Telephone Operators

143 Finance and Insurance Clerks

- 1431 Accounting and Related Clerks
- 1432 Payroll Clerks
- 1433 Customer Service Representatives - Financial Services
- 1434 Banking, Insurance and Other Financial Clerks
- 1435 Collectors

144 Administrative Support Clerks

- 1441 Administrative Clerks
- 1442 Personnel Clerks
- 1443 Court Clerks

145 Library, Correspondence and Related Information Clerks

- 1451 Library Clerks
- 1452 Correspondence, Publication and Related Clerks
- 1453 Customer Service, Information and Related Clerks
- 1454 Survey Interviewers and Statistical Clerks

146 Mail and Message Distribution Occupations

- 1461 Mail, Postal and Related Clerks
- 1462 Letter Carriers
- 1463 Couriers, Messengers and Door-to-Door Distributors

147 Recording, Scheduling and Distributing Occupations

- 1471 Shippers and Receivers
- 1472 Storekeepers and Parts Clerks
- 1473 Production Clerks
- 1474 Purchasing and Inventory Clerks
- 1475 Dispatchers and Radio Operators
- 1476 Transportation Route and Crew Schedulers

NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS**Major Group 21****PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES****211 Physical Science Professionals**

- 2111 Physicists and Astronomers
- 2112 Chemists
- 2113 Geologists, Geochemists and Geophysicists
- 2114 Meteorologists
- 2115 Other Professional Occupations in Physical Sciences

212 Life Science Professionals

- 2121 Biologists and Related Scientists
- 2122 Forestry Professionals
- 2123 Agricultural Representatives, Consultants and Specialists

213 Civil, Mechanical, Electrical and Chemical Engineers

- 2131 Civil Engineers
- 2132 Mechanical Engineers
- 2133 Electrical and Electronics Engineers
- 2134 Chemical Engineers

214 Other Engineers

- 2141 Industrial and Manufacturing Engineers
- 2142 Metallurgical and Materials Engineers
- 2143 Mining Engineers
- 2144 Geological Engineers
- 2145 Petroleum Engineers
- 2146 Aerospace Engineers
- 2147 Computer Engineers (Except Software Engineers and Designers)
- 2148 Other Professional Engineers, n.e.c.

215 Architects, Urban Planners and Land Surveyors

- 2151 Architects
- 2152 Landscape Architects
- 2153 Urban and Land Use Planners
- 2154 Land Surveyors

216 Mathematicians, Statisticians and Actuaries

- 2161 Mathematicians, Statisticians and Actuaries

217 Computer and Information Systems Professionals

- 2171 Information Systems Analysts and Consultants
- 2172 Database Analysts and Data Administrators
- 2173 Software Engineers and Designers
- 2174 Computer Programmers and Interactive Media Developers
- 2175 Web Designers and Developers

Major Group 22

TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES**221 Technical Occupations in Physical Sciences**

- 2211 Chemical Technologists and Technicians
- 2212 Geological and Mineral Technologists and Technicians
- 2213 Meteorological Technicians

222 Technical Occupations in Life Sciences

- 2221 Biological Technologists and Technicians
- 2222 Agricultural and Fish Products Inspectors
- 2223 Forestry Technologists and Technicians
- 2224 Conservation and Fishery Officers
- 2225 Landscape and Horticulture Technicians and Specialists

223 Technical Occupations in Civil, Mechanical and Industrial Engineering

- 2231 Civil Engineering Technologists and Technicians
- 2232 Mechanical Engineering Technologists and Technicians
- 2233 Industrial Engineering and Manufacturing Technologists and Technicians
- 2234 Construction Estimators

224 Technical Occupations in Electronics and Electrical Engineering

- 2241 Electrical and Electronics Engineering Technologists and Technicians
- 2242 Electronic Service Technicians (Household and Business Equipment)
- 2243 Industrial Instrument Technicians and Mechanics
- 2244 Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors

225 Technical Occupations in Architecture, Drafting, Surveying and Mapping

- 2251 Architectural Technologists and Technicians
- 2252 Industrial Designers
- 2253 Drafting Technologists and Technicians
- 2254 Land Survey Technologists and Technicians
- 2255 Mapping and Related Technologists and Technicians

226 Other Technical Inspectors and Regulatory Officers

- 2261 Non-Destructive Testers and Inspectors
- 2262 Engineering Inspectors and Regulatory Officers
- 2263 Inspectors in Public and Environmental Health and Occupational Health and Safety
- 2264 Construction Inspectors

227 Transportation Officers and Controllers

- 2271 Air Pilots, Flight Engineers and Flying Instructors
- 2272 Air Traffic Control and Related Occupations
- 2273 Deck Officers, Water Transport
- 2274 Engineer Officers, Water Transport
- 2275 Railway Traffic Controllers and Marine Traffic Regulators

228 Technical Occupations in Computer and Information Systems

- 2281 Computer Network Technicians
- 2282 User Support Technicians
- 2283 Systems Testing Technicians

HEALTH OCCUPATIONS**Major Group 31****PROFESSIONAL OCCUPATIONS IN HEALTH****311 Physicians, Dentists and Veterinarians**

- 3111 Specialist Physicians
- 3112 General Practitioners and Family Physicians
- 3113 Dentists
- 3114 Veterinarians

312 Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals

- 3121 Optometrists
- 3122 Chiropractors
- 3123 Other Professional Occupations in Health Diagnosing and Treating

313 Pharmacists, Dietitians and Nutritionists

- 3131 Pharmacists
- 3132 Dietitians and Nutritionists

314 Therapy and Assessment Professionals

- 3141 Audiologists and Speech-Language Pathologists
- 3142 Physiotherapists
- 3143 Occupational Therapists
- 3144 Other Professional Occupations in Therapy and Assessment

315 Nurse Supervisors and Registered Nurses

- 3151 Head Nurses and Supervisors
- 3152 Registered Nurses

Major Group 32

TECHNICAL AND SKILLED OCCUPATIONS IN HEALTH**321 Medical Technologists and Technicians (Except Dental Health)**

- 3211 Medical Laboratory Technologists and Pathologists' Assistants
- 3212 Medical Laboratory Technicians
- 3213 Veterinary and Animal Health Technologists and Technicians
- 3214 Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists
- 3215 Medical Radiation Technologists
- 3216 Medical Sonographers
- 3217 Cardiology Technologists
- 3218 Electroencephalographic and Other Diagnostic Technologists, n.e.c.
- 3219 Other Medical Technologists and Technicians (Except Dental Health)

322 Technical Occupations in Dental Health Care

- 3221 Denturists
- 3222 Dental Hygienists and Dental Therapists
- 3223 Dental Technologists, Technicians and Laboratory Bench Workers

323 Other Technical Occupations in Health Care (Except Dental)

- 3231 Opticians
- 3232 Midwives and Practitioners of Natural Healing
- 3233 Licensed Practical Nurses
- 3234 Ambulance Attendants and Other Paramedical Occupations
- 3235 Other Technical Occupations in Therapy and Assessment

Major Group 34

ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES

341 Assisting Occupations in Support of Health Services

- 3411 Dental Assistants
- 3413 Nurse Aides, Orderlies and Patient Service Associates
- 3414 Other Assisting Occupations in Support of Health Services

OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION

Major Group 41

PROFESSIONAL OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICES AND RELIGION

411 Judges, Lawyers and Quebec Notaries

- 4111 Judges
- 4112 Lawyers and Quebec Notaries

412 University Professors and Assistants

- 4121 University Professors
- 4122 Post-Secondary Teaching and Research Assistants

413 College and Other Vocational Instructors

- 4131 College and Other Vocational Instructors

414 Secondary and Elementary School Teachers and Educational Counsellors

- 4141 Secondary School Teachers
- 4142 Elementary School and Kindergarten Teachers
- 4143 Educational Counsellors

415 Psychologists, Social Workers, Counsellors, Clergy and Probation Officers

- 4151 Psychologists
- 4152 Social Workers
- 4153 Family, Marriage and Other Related Counsellors
- 4154 Ministers of Religion
- 4155 Probation and Parole Officers and Related Occupations

416 Policy and Program Officers, Researchers and Consultants

- 4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers
- 4162 Economists and Economic Policy Researchers and Analysts
- 4163 Business Development Officers and Marketing Researchers and Consultants
- 4164 Social Policy Researchers, Consultants and Program Officers
- 4165 Health Policy Researchers, Consultants and Program Officers
- 4166 Education Policy Researchers, Consultants and Program Officers
- 4167 Recreation, Sports and Fitness Program Supervisors and Consultants
- 4168 Program Officers Unique to Government
- 4169 Other Professional Occupations in Social Science, n.e.c.

Major Group 42

PARAPROFESSIONAL OCCUPATIONS IN LAW, SOCIAL SERVICES, EDUCATION AND RELIGION**421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.**

- 4211 Paralegal and Related Occupations
- 4212 Community and Social Service Workers
- 4213 Employment Counsellors
- 4214 Early Childhood Educators and Assistants
- 4215 Instructors and Teachers of Persons with Disabilities
- 4216 Other Instructors
- 4217 Other Religious Occupations

OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT

Major Group 51

PROFESSIONAL OCCUPATIONS IN ART AND CULTURE**511 Librarians, Archivists, Conservators and Curators**

- 5111 Librarians
- 5112 Conservators and Curators
- 5113 Archivists

512 Writing, Translating and Public Relations Professionals

- 5121 Authors and Writers
- 5122 Editors
- 5123 Journalists
- 5124 Professional Occupations in Public Relations and Communications
- 5125 Translators, Terminologists and Interpreters

513 Creative and Performing Artists

- 5131 Producers, Directors, Choreographers and Related Occupations
- 5132 Conductors, Composers and Arrangers
- 5133 Musicians and Singers
- 5134 Dancers
- 5135 Actors and Comedians
- 5136 Painters, Sculptors and Other Visual Artists

Major Group 52

TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT**521 Technical Occupations in Libraries, Archives, Museums and Art Galleries**

- 5211 Library and Archive Technicians and Assistants
- 5212 Technical Occupations Related to Museums and Art Galleries

522 Photographers, Graphic Arts Technicians and Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts

- 5221 Photographers
- 5222 Film and Video Camera Operators
- 5223 Graphic Arts Technicians
- 5224 Broadcast Technicians
- 5225 Audio and Video Recording Technicians
- 5226 Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
- 5227 Support Occupations in Motion Pictures, Broadcasting and the Performing Arts

523 Announcers and Other Performers

- 5231 Announcers and Other Broadcasters
- 5232 Other Performers

524 Creative Designers and Craftspersons

- 5241 Graphic Designers and Illustrators
- 5242 Interior Designers
- 5243 Theatre, Fashion, Exhibit and Other Creative Designers
- 5244 Artisans and Craftspersons
- 5245 Patternmakers - Textile, Leather and Fur Products

525 Athletes, Coaches, Referees and Related Occupations

- 5251 Athletes
- 5252 Coaches
- 5253 Sports Officials and Referees
- 5254 Program Leaders and Instructors in Recreation, Sport and Fitness

SALES AND SERVICE OCCUPATIONS

Major Group 62

SKILLED SALES AND SERVICE OCCUPATIONS

621 Sales and Service Supervisors

- 6211 Retail Trade Supervisors
- 6212 Food Service Supervisors
- 6213 Executive Housekeepers
- 6214 Dry Cleaning and Laundry Supervisors
- 6215 Cleaning Supervisors
- 6216 Other Service Supervisors

622 Technical Sales Specialists, Wholesale Trade

- 6221 Technical Sales Specialists - Wholesale Trade

623 Insurance and Real Estate Sales Occupations and Buyers

- 6231 Insurance Agents and Brokers
- 6232 Real Estate Agents and Salespersons
- 6233 Retail and Wholesale Buyers
- 6234 Grain Elevator Operators

624 Chefs and Cooks

- 6241 Chefs
- 6242 Cooks

625 Butchers and Bakers

- 6251 Butchers, Meat Cutters and Fishmongers - Retail and Wholesale
- 6252 Bakers

626 Police Officers and Firefighters

- 6261 Police Officers (Except Commissioned)
- 6262 Firefighters

627 Technical Occupations in Personal Service

- 6271 Hairstylists and Barbers
- 6272 Funeral Directors and Embalmers

Major Group 64

INTERMEDIATE SALES AND SERVICE OCCUPATIONS

641 Sales Representatives, Wholesale Trade

- 6411 Sales Representatives - Wholesale Trade (Non-Technical)

642 Retail Salespersons and Sales Clerks

6421 Retail Salespersons and Sales Clerks

643 Occupations in Travel and Accommodation

6431 Travel Counsellors

6432 Pursers and Flight Attendants

6433 Airline Sales and Service Agents

6434 Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)

6435 Hotel Front Desk Clerks

644 Tour and Recreational Guides and Casino Occupations

6441 Tour and Travel Guides

6442 Outdoor Sport and Recreational Guides

6443 Casino Occupations

645 Occupations in Food and Beverage Service

6451 Maîtres d'hôtel and Hosts/Hostesses

6452 Bartenders

6453 Food and Beverage Servers

646 Other Occupations in Protective Service

6461 Sheriffs and Bailiffs

6462 Correctional Service Officers

6463 By-Law Enforcement and Other Regulatory Officers, n.e.c.

6464 Occupations Unique to the Armed Forces

6465 Other Protective Service Occupations

647 Childcare and Home Support Workers

6471 Visiting Homemakers, Housekeepers and Related Occupations

6472 Elementary and Secondary School Teacher Assistants

6474 Babysitters, Nannies and Parents' Helpers

648 Other Occupations in Personal Service

6481 Image, Social and Other Personal Consultants

6482 Estheticians, Electrologists and Related Occupations

6483 Pet Groomers and Animal Care Workers

6484 Other Personal Service Occupations

Major Group 66

ELEMENTAL SALES AND SERVICE OCCUPATIONS**661 Cashiers**

6611 Cashiers

662 Other Sales and Related Occupations

- 6621 Service Station Attendants
- 6622 Grocery Clerks and Store Shelf Stockers
- 6623 Other Elemental Sales Occupations

664 Food Counter Attendants, Kitchen Helpers and Related Occupations

- 6641 Food Counter Attendants, Kitchen Helpers and Related Occupations

665 Security Guards and Related Occupations

- 6651 Security Guards and Related Occupations

666 Cleaners

- 6661 Light Duty Cleaners
- 6662 Specialized Cleaners
- 6663 Janitors, Caretakers and Building Superintendents

667 Other Occupations in Travel, Accommodation, Amusement and Recreation

- 6671 Operators and Attendants in Amusement, Recreation and Sport
- 6672 Other Attendants in Accommodation and Travel

668 Other Elemental Service Occupations

- 6681 Dry Cleaning and Laundry Occupations
- 6682 Ironing, Pressing and Finishing Occupations
- 6683 Other Elemental Service Occupations

TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS

Major Group 72/73

TRADES AND SKILLED TRANSPORT AND EQUIPMENT OPERATORS**721 Contractors and Supervisors, Trades and Related Workers**

- 7211 Supervisors, Machinists and Related Occupations
- 7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
- 7213 Contractors and Supervisors, Pipefitting Trades
- 7214 Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades
- 7215 Contractors and Supervisors, Carpentry Trades
- 7216 Contractors and Supervisors, Mechanic Trades
- 7217 Contractors and Supervisors, Heavy Construction Equipment Crews
- 7218 Supervisors, Printing and Related Occupations
- 7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers

722 Supervisors, Railway and Motor Transportation Occupations

- 7221 Supervisors, Railway Transport Operations
- 7222 Supervisors, Motor Transport and Other Ground Transit Operators

723 Machinists and Related Occupations

- 7231 Machinists and Machining and Tooling Inspectors
- 7232 Tool and Die Makers

724 Electrical Trades and Telecommunication Occupations

- 7241 Electricians (Except Industrial and Power System)
- 7242 Industrial Electricians
- 7243 Power System Electricians
- 7244 Electrical Power Line and Cable Workers
- 7245 Telecommunications Line and Cable Workers
- 7246 Telecommunications Installation and Repair Workers
- 7247 Cable Television Service and Maintenance Technicians

725 Plumbers, Pipefitters and Gas Fitters

- 7251 Plumbers
- 7252 Steamfitters, Pipefitters and Sprinkler System Installers
- 7253 Gas Fitters

726 Metal Forming, Shaping and Erecting Trades

- 7261 Sheet Metal Workers
- 7262 Boilermakers
- 7263 Structural Metal and Platework Fabricators and Fitters
- 7264 Ironworkers
- 7265 Welders and Related Machine Operators
- 7266 Blacksmiths and Die Setters

727 Carpenters and Cabinetmakers

- 7271 Carpenters
- 7272 Cabinetmakers

728 Masonry and Plastering Trades

- 7281 Bricklayers
- 7282 Concrete Finishers
- 7283 Tilesetters
- 7284 Plasterers, Drywall Installers and Finishers and Lathers

729 Other Construction Trades

- 7291 Roofers and Shinglers
- 7292 Glaziers
- 7293 Insulators
- 7294 Painters and Decorators
- 7295 Floor Covering Installers

731 Machinery and Transportation Equipment Mechanics (Except Motor Vehicle)

- 7311 Construction Millwrights and Industrial Mechanics (Except Textile)
- 7312 Heavy-Duty Equipment Mechanics
- 7313 Refrigeration and Air Conditioning Mechanics
- 7314 Railway Carmen/women
- 7315 Aircraft Mechanics and Aircraft Inspectors
- 7316 Machine Fitters
- 7317 Textile Machinery Mechanics and Repairers
- 7318 Elevator Constructors and Mechanics

732 Automotive Service Technicians

- 7321 Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers
- 7322 Motor Vehicle Body Repairers

733 Other Mechanics

- 7331 Oil and Solid Fuel Heating Mechanics
- 7332 Electric Appliance Servicers and Repairers
- 7333 Electrical Mechanics
- 7334 Motorcycle and Other Related Mechanics
- 7335 Other Small Engine and Equipment Mechanics

734 Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations

- 7341 Upholsterers
- 7342 Tailors, Dressmakers, Furriers and Milliners
- 7343 Shoe Repairers and Shoemakers
- 7344 Jewellers, Watch Repairers and Related Occupations

735 Stationary Engineers and Power Station and System Operators

- 7351 Stationary Engineers and Auxiliary Equipment Operators
- 7352 Power Systems and Power Station Operators

736 Train Crew Operating Occupations

- 7361 Railway and Yard Locomotive Engineers
- 7362 Railway Conductors and Brakemen/women

737 Crane Operators, Drillers and Blasters

- 7371 Crane Operators
- 7372 Drillers and Blasters - Surface Mining, Quarrying and Construction
- 7373 Water Well Drillers

738 Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.

- 7381 Printing Press Operators
- 7382 Commercial Divers
- 7383 Other Trades and Related Occupations

Major Group 74**INTERMEDIATE OCCUPATIONS IN TRANSPORT, EQUIPMENT OPERATION,
INSTALLATION AND MAINTENANCE****741 Motor Vehicle and Transit Drivers**

- 7411 Truck Drivers
- 7412 Bus Drivers, Subway Operators and Other Transit Operators
- 7413 Taxi and Limousine Drivers and Chauffeurs
- 7414 Delivery and Courier Service Drivers

742 Heavy Equipment Operators

- 7421 Heavy Equipment Operators (Except Crane)
- 7422 Public Works Maintenance Equipment Operators

743 Other Transport Equipment Operators and Related Workers

- 7431 Railway Yard Workers
- 7432 Railway Track Maintenance Workers
- 7433 Deck Crew, Water Transport
- 7434 Engine Room Crew, Water Transport
- 7435 Lock and Cable Ferry Operators and Related Occupations
- 7436 Boat Operators
- 7437 Air Transport Ramp Attendants

744 Other Installers, Repairers and Servicers

- 7441 Residential and Commercial Installers and Servicers
- 7442 Waterworks and Gas Maintenance Workers
- 7443 Automotive Mechanical Installers and Servicers
- 7444 Pest Controllers and Fumigators
- 7445 Other Repairers and Servicers

745 Longshore Workers and Material Handlers

- 7451 Longshore Workers
- 7452 Material Handlers

Major Group 76**TRADES HELPERS, CONSTRUCTION LABOURERS AND RELATED OCCUPATIONS****761 Trades Helpers and Labourers**

- 7611 Construction Trades Helpers and Labourers
- 7612 Other Trades Helpers and Labourers

762 Public Works and Other Labourers, n.e.c.

- 7621 Public Works and Maintenance Labourers
- 7622 Railway and Motor Transport Labourers

OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY

Major Group 82

SKILLED OCCUPATIONS IN PRIMARY INDUSTRY

821 Supervisors, Logging and Forestry

8211 Supervisors, Logging and Forestry

822 Supervisors, Mining, Oil and Gas

8221 Supervisors, Mining and Quarrying

8222 Supervisors, Oil and Gas Drilling and Service

823 Underground Miners, Oil and Gas Drillers and Related Workers

8231 Underground Production and Development Miners

8232 Oil and Gas Well Drillers, Servicers, Testers and Related Workers

824 Logging Machinery Operators

8241 Logging Machinery Operators

825 Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture

8251 Farmers and Farm Managers

8252 Agricultural and Related Service Contractors and Managers

8253 Farm Supervisors and Specialized Livestock Workers

8254 Nursery and Greenhouse Operators and Managers

8255 Landscaping and Grounds Maintenance Contractors and Managers

8256 Supervisors, Landscape and Horticulture

8257 Aquaculture Operators and Managers

826 Fishing Vessel Masters and Skippers and Fishermen/women

8261 Fishing Masters and Officers

8262 Fishing Vessel Skippers and Fishermen/women

Major Group 84

INTERMEDIATE OCCUPATIONS IN PRIMARY INDUSTRY

841 Mine Service Workers and Operators in Oil and Gas Drilling

8411 Underground Mine Service and Support Workers

8412 Oil and Gas Well Drilling Workers and Services Operators

842 Logging and Forestry Workers

8421 Chain Saw and Skidder Operators

8422 Silviculture and Forestry Workers

843 Agriculture and Horticulture Workers

- 8431 General Farm Workers
- 8432 Nursery and Greenhouse Workers

844 Other Fishing and Trapping Occupations

- 8441 Fishing Vessel Deckhands
- 8442 Trappers and Hunters

Major Group 86

LABOURERS IN PRIMARY INDUSTRY**861 Primary Production Labourers**

- 8611 Harvesting Labourers
- 8612 Landscaping and Grounds Maintenance Labourers
- 8613 Aquaculture and Marine Harvest Labourers
- 8614 Mine Labourers
- 8615 Oil and Gas Drilling, Servicing and Related Labourers
- 8616 Logging and Forestry Labourers

OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES

Major Group 92

PROCESSING, MANUFACTURING AND UTILITIES SUPERVISORS AND SKILLED OPERATORS**921 Supervisors, Processing Occupations**

- 9211 Supervisors, Mineral and Metal Processing
- 9212 Supervisors, Petroleum, Gas and Chemical Processing and Utilities
- 9213 Supervisors, Food, Beverage and Tobacco Processing
- 9214 Supervisors, Plastic and Rubber Products Manufacturing
- 9215 Supervisors, Forest Products Processing
- 9216 Supervisors, Textile Processing

922 Supervisors, Assembly and Fabrication

- 9221 Supervisors, Motor Vehicle Assembling
- 9222 Supervisors, Electronics Manufacturing
- 9223 Supervisors, Electrical Products Manufacturing
- 9224 Supervisors, Furniture and Fixtures Manufacturing
- 9225 Supervisors, Fabric, Fur and Leather Products Manufacturing
- 9226 Supervisors, Other Mechanical and Metal Products Manufacturing
- 9227 Supervisors, Other Products Manufacturing and Assembly

923 Central Control and Process Operators in Manufacturing and Processing

- 9231 Central Control and Process Operators, Mineral and Metal Processing
- 9232 Petroleum, Gas and Chemical Process Operators
- 9233 Pulping Control Operators
- 9234 Papermaking and Coating Control Operators

Major Group 94/95

PROCESSING AND MANUFACTURING MACHINE OPERATORS AND ASSEMBLERS**941 Machine Operators and Related Workers in Metal and Mineral Products Processing**

- 9411 Machine Operators, Mineral and Metal Processing
- 9412 Foundry Workers
- 9413 Glass Forming and Finishing Machine Operators and Glass Cutters
- 9414 Concrete, Clay and Stone Forming Operators
- 9415 Inspectors and Testers, Mineral and Metal Processing

942 Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing

- 9421 Chemical Plant Machine Operators
- 9422 Plastics Processing Machine Operators
- 9423 Rubber Processing Machine Operators and Related Workers
- 9424 Water and Waste Plant Operators

943 Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing

- 9431 Sawmill Machine Operators
- 9432 Pulp Mill Machine Operators
- 9433 Papermaking and Finishing Machine Operators
- 9434 Other Wood Processing Machine Operators
- 9435 Paper Converting Machine Operators
- 9436 Lumber Graders and Other Wood Processing Inspectors and Graders

944 Machine Operators and Related Workers in Textile Processing

- 9441 Textile Fibre and Yarn Preparation Machine Operators
- 9442 Weavers, Knitters and Other Fabric-Making Occupations
- 9443 Textile Dyeing and Finishing Machine Operators
- 9444 Textile Inspectors, Graders and Samplers

945 Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing

- 9451 Sewing Machine Operators
- 9452 Fabric, Fur and Leather Cutters
- 9453 Hide and Pelt Processing Workers
- 9454 Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing

946 Machine Operators and Related Workers in Food, Beverage and Tobacco Processing

- 9461 Process Control and Machine Operators, Food and Beverage Processing
- 9462 Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers
- 9463 Fish Plant Workers
- 9464 Tobacco Processing Machine Operators
- 9465 Testers and Graders, Food and Beverage Processing

947 Printing Machine Operators and Related Occupations

- 9471 Printing Machine Operators
- 9472 Camera, Platemaking and Other Prepress Occupations
- 9473 Binding and Finishing Machine Operators
- 9474 Photographic and Film Processors

948 Mechanical, Electrical and Electronics Assemblers

- 9481 Aircraft Assemblers and Aircraft Assembly Inspectors
- 9482 Motor Vehicle Assemblers, Inspectors and Testers
- 9483 Electronics Assemblers, Fabricators, Inspectors and Testers
- 9484 Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing
- 9485 Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
- 9486 Mechanical Assemblers and Inspectors
- 9487 Machine Operators and Inspectors, Electrical Apparatus Manufacturing

949 Other Assembly and Related Occupations

- 9491 Boat Assemblers and Inspectors
- 9492 Furniture and Fixture Assemblers and Inspectors
- 9493 Other Wood Products Assemblers and Inspectors
- 9494 Furniture Finishers and Refinishers
- 9495 Plastic Products Assemblers, Finishers and Inspectors
- 9496 Painters and Coaters - Industrial
- 9497 Plating, Metal Spraying and Related Operators
- 9498 Other Assemblers and Inspectors

951 Machining, Metalworking, Woodworking and Related Machine Operators

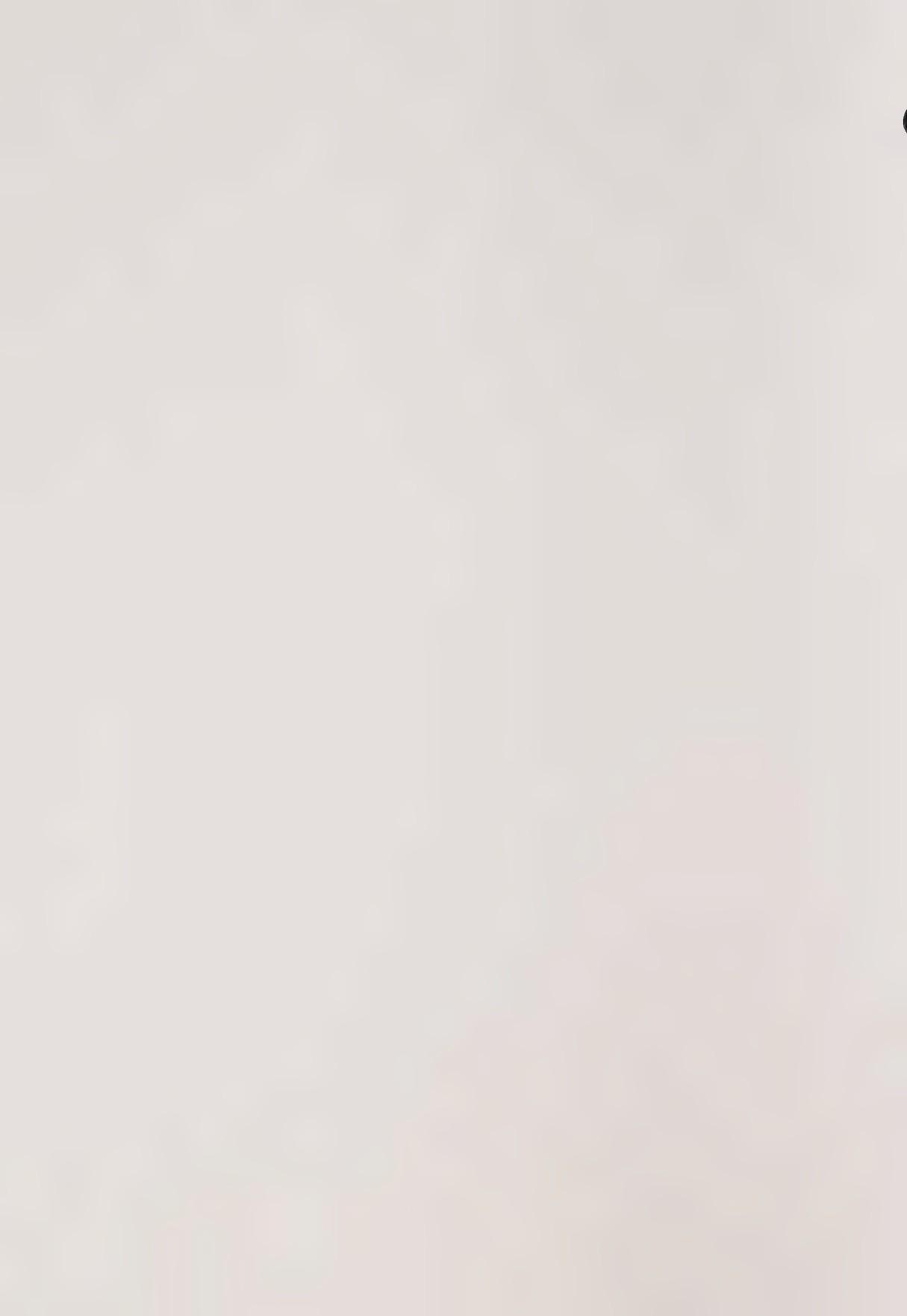
- 9511 Machining Tool Operators
- 9512 Forging Machine Operators
- 9513 Woodworking Machine Operators
- 9514 Metalworking Machine Operators
- 9516 Other Metal Products Machine Operators
- 9517 Other Products Machine Operators

Major Group 96

LABOURERS IN PROCESSING, MANUFACTURING AND UTILITIES

961 Labourers in Processing, Manufacturing and Utilities

- 9611 Labourers in Mineral and Metal Processing
- 9612 Labourers in Metal Fabrication
- 9613 Labourers in Chemical Products Processing and Utilities
- 9614 Labourers in Wood, Pulp and Paper Processing
- 9615 Labourers in Rubber and Plastic Products Manufacturing
- 9616 Labourers in Textile Processing
- 9617 Labourers in Food, Beverage and Tobacco Processing
- 9618 Labourers in Fish Processing
- 9619 Other Labourers in Processing, Manufacturing and Utilities



MANAGEMENT OCCUPATIONS

Major Group 00

SENIOR MANAGEMENT OCCUPATIONS

001 Legislators and Senior Management

- 0011 Legislators
- 0012 Senior Government Managers and Officials
- 0013 Senior Managers - Financial, Communications and Other Business Services
- 0014 Senior Managers - Health, Education, Social and Community Services and Membership Organizations
- 0015 Senior Managers - Trade, Broadcasting and Other Services, n.e.c.
- 0016 Senior Managers - Goods Production, Utilities, Transportation and Construction

Major Group 01-09

MIDDLE AND OTHER MANAGEMENT OCCUPATIONS

011 Administrative Services Managers

- 0111 Financial Managers
- 0112 Human Resources Managers
- 0113 Purchasing Managers
- 0114 Other Administrative Services Managers

012 Managers in Financial and Business Services

- 0121 Insurance, Real Estate and Financial Brokerage Managers
- 0122 Banking, Credit and Other Investment Managers
- 0123 Other Business Services Managers

013 Managers in Communication (Except Broadcasting)

- 0131 Telecommunication Carriers Managers
- 0132 Postal and Courier Services Managers

021 Managers in Engineering, Architecture, Science and Information Systems

- 0211 Engineering Managers
- 0212 Architecture and Science Managers
- 0213 Computer and Information Systems Managers

031 Managers in Health, Education, Social and Community Services

- 0311 Managers in Health Care
- 0312 Administrators - Post-Secondary Education and Vocational Training
- 0313 School Principals and Administrators of Elementary and Secondary Education
- 0314 Managers in Social, Community and Correctional Services

041 Managers in Public Administration

- 0411 Government Managers - Health and Social Policy Development and Program Administration
- 0412 Government Managers - Economic Analysis, Policy Development and Program Administration
- 0413 Government Managers - Education Policy Development and Program Administration
- 0414 Other Managers in Public Administration

051 Managers in Art, Culture, Recreation and Sport

- 0511 Library, Archive, Museum and Art Gallery Managers
- 0512 Managers - Publishing, Motion Pictures, Broadcasting and Performing Arts
- 0513 Recreation, Sports and Fitness Program and Service Directors

061 Sales, Marketing and Advertising Managers

- 0611 Sales, Marketing and Advertising Managers

062 Managers in Retail Trade

- 0621 Retail Trade Managers

063 Managers in Food Service and Accommodation

- 0631 Restaurant and Food Service Managers
- 0632 Accommodation Service Managers

064 Managers in Protective Service

- 0641 Commissioned Police Officers
- 0642 Fire Chiefs and Senior Firefighting Officers
- 0643 Commissioned Officers, Armed Forces

065 Managers in Other Services

- 0651 Other Services Managers

071 Managers in Construction and Transportation

- 0711 Construction Managers
- 0712 Residential Home Builders and Renovators
- 0713 Transportation Managers

072 Facility Operation and Maintenance Managers

- 0721 Facility Operation and Maintenance Managers

081 Managers in Primary Production (Except Agriculture)

- 0811 Primary Production Managers (Except Agriculture)

091 Managers in Manufacturing and Utilities

0911 Manufacturing Managers

0912 Utilities Managers

0011 Legislators

Legislators participate in the activities of a federal, provincial, territorial or local government legislative body or executive council, band council or school board as elected or appointed members.

Example titles

cabinet minister
city councillor
First Nations band chief
governor general
lieutenant-governor
mayor
Member of Parliament (MP)

Member of the National Assembly (MNA)
Member of the Provincial Parliament (MPP)
premier
prime minister
school board trustee
senator

Main duties

Legislators perform some or all of the following duties:

- Enact, amend or repeal laws and regulations
- Participate in developing or amending government policies, programs or procedures
- Represent their government at local, national and international meetings and conferences
- Respond to matters of concern to constituents or the general public
- May serve as minister responsible for a government department or agency and direct senior government managers and officials in the implementation of government policy and the management of that department or agency.

Employment requirements

- Election to a legislative body is required or appointment to positions such as lieutenant-governor or governor general.

Classified elsewhere

- Commissioners – government services (in 0012 *Senior Government Managers and Officials*)
- Elected or appointed officials of health care institutions, educational institutions, unions and voluntary organizations (in 0014 *Senior Managers – Health, Education, Social and Community Services and Membership Organizations*)

0012 Senior Government Managers and Officials

Senior government managers and officials plan, organize, direct, control and evaluate, through middle managers, the major activities of municipal or regional governments or of provincial, territorial or federal departments, boards, agencies or commissions. They establish the direction to be taken by these organizations in accordance with legislation and policies made by elected representatives or legislative bodies.

Example titles

assistant deputy minister	deputy minister
chairperson, Human Rights Commission	director general – government services
chief administrative officer – regional municipality	executive director – government services
chief statistician – government services	high commissioner
city administrator	

Main duties

Senior government managers and officials perform some or all of the following duties:

- Establish objectives for the organization in accordance with government legislation and policy, formulate or approve and evaluate programs and procedures alone or in conjunction with senior government committees
- Advise elected representatives on policy questions and refer any major policy matters to these representatives for final decision
- Recommend, review, evaluate and approve documents, briefs and reports submitted by middle managers and senior staff members
- Ensure appropriate systems and procedures are developed and implemented to provide budgetary control
- Co-ordinate department activities with other senior government managers and officials
- Make presentations to legislative and other government committees regarding policies, programs or budgets.

Employment requirements

- A university degree or college diploma is usually required.
- A graduate degree in a related field may be required.
- Several years of managerial experience in the public or private sector are required.

Classified elsewhere

- *Legislators (0011)*
- Middle managers in government (in 041 *Managers in Public Administration*)

0013 Senior Managers – Financial, Communications and Other Business Services

Senior managers in this unit group are usually appointed by a board of directors, to which they report. Working either alone or in conjunction with the board of directors, they develop and establish objectives for the company and develop or approve policies and programs. They plan, organize, direct, control and evaluate, through middle managers, the operations of their organization in relation to established objectives.

Example titles

bank president	president, advertising agency
chief executive officer (CEO) – telephone company	president and chief executive officer
chief financial officer (CFO) – advertising agency	president, computing service company
chief operating officer – engineering firm	regional vice-president, trust company
executive director, credit union	vice-president, human resources – bank
executive vice-president, real estate agency	vice-president, marketing – clerical staff services
general manager, real estate management company	vice-president, operations – satellite communication services

Main duties

Senior managers in this unit group perform some or all of the following duties:

- Determine the company's mission and strategic direction as conveyed through policies and concrete objectives which are met through the effective management of human, financial and material resources
- Authorize and organize the establishment of major departments and associated senior staff positions
- Allocate material, human and financial resources to implement organizational policies and programs; establish financial and administrative controls; formulate and approve promotional campaigns; and approve overall human resources planning
- Select middle managers, directors or other executive staff; delegate the necessary authority to them and create optimum working conditions
- Represent the organization or delegate representatives to act on behalf of the organization in negotiations or other official functions.

Senior managers in this unit group may specialize in areas such as finance, marketing or human resources or in a particular service area.

Employment requirements

- A university degree in business administration, commerce, computer science or other discipline related to the service provided is usually required.

- Several years of experience as a middle manager in financial, communications or other business services are usually required.
- Specialization in a particular functional area or service is possible through specific university training in that area or through previous experience.
- Senior managers in finance usually require a professional accounting designation.

Additional information

- The boundaries of this unit group are defined by the North American Industry Classification System (NAICS). Included are senior managers in the following industries: communications, finance and insurance, real estate and business services.

Classified elsewhere

Related middle managers are classified in the following minor groups:

- *Managers in Communication (Except Broadcasting) (013)*
- *Managers in Engineering, Architecture, Science and Information Systems (021)*
- *Managers in Financial and Business Services (012)*

0014 Senior Managers – Health, Education, Social and Community Services and Membership Organizations

Senior managers in this unit group plan, organize, direct, control and evaluate, through middle managers, membership and other organizations or institutions that deliver health, education, social or community services. They formulate policies which establish the direction to be taken by these organizations, either alone or in conjunction with a board of directors.

Example titles

chairperson, arts and culture association
chairperson, scientific association
chief financial officer (CFO), educational institution
corporate controller, social services institution
executive director, health services institution

executive director, professional association
executive director, voluntary organization
general manager, membership organization
president, business association
president, labour organization
president, music guild

Main duties

Senior managers in this unit group perform some or all of the following duties:

- Establish objectives for the organization or institution and formulate or approve policies and programs
- Authorize and organize the establishment of major departments and associated senior staff positions
- Allocate material, human and financial resources to implement organizational policies and programs; establish financial and administrative controls; formulate and approve promotional campaigns; and approve overall personnel planning
- Select middle managers, directors or other executive staff
- Co-ordinate the work of regions, divisions or departments
- Represent the organization or institution or delegate representatives to act on behalf of the organization in negotiations or other official functions.

Senior managers in this unit group may specialize in areas such as finance, marketing, human resources or in a particular service area.

Employment requirements

- A university degree or college diploma in business administration, hospital administration, finance or other discipline related to the service provided is usually required.
- Several years of experience as a middle manager in a related institution or organization are usually required.

- Specialization in a particular functional area or service is possible through specific university or college training in that area or through previous experience.
- Senior managers in finance usually require a professional accounting designation.

Additional information

- The boundaries of this unit group are defined by the North American Industry Classification System (NAICS). Included are senior managers in the following industries: educational services, health care and social services and membership organizations.

Classified elsewhere

Related middle managers are classified in the following unit groups:

- *Administrators – Post-Secondary Education and Vocational Training (0312)*
- *Government Managers – Education Policy Development and Program Administration (0413)*
- *Government Managers – Health and Social Policy Development and Program Administration (0411)*
- *Managers in Health Care (0311)*
- *Managers in Social, Community and Correctional Services (0314)*
- *Other Managers in Public Administration (0414)*
- *School Principals and Administrators of Elementary and Secondary Education (0313)*

0015 Senior Managers – Trade, Broadcasting and Other Services, n.e.c.

Senior managers in this unit group plan, organize, direct, control and evaluate, through middle managers, trade, broadcasting and other service companies not elsewhere classified. They formulate policies which establish the direction to be taken by these companies, either alone or in conjunction with a board of directors.

Example titles

chief executive officer (CEO), travel agency
chief financial officer (CFO), professional sports club
corporate controller, restaurant chain
executive director, automobile association
general manager, cleaning service
president, department store

regional vice-president, hotel chain
vice-president, engineering – television
broadcasting services
vice-president, finance – food wholesaling
vice-president, marketing – grocery store chain
vice-president, operations – radio broadcasting services

Main duties

Senior managers in this unit group perform some or all of the following duties:

- Establish objectives for the company and formulate or approve policies and programs
- Authorize and organize the establishment of major departments and associated senior staff positions
- Allocate material, human and financial resources to implement organizational policies and programs; establish financial and administrative controls; formulate and approve promotional campaigns; and approve overall personnel planning
- Select middle managers, directors or other executive staff
- Co-ordinate the work of regions, divisions or departments
- Represent the company or delegate representatives to act on behalf of the company in negotiations or other official functions.

Senior managers in this unit group may specialize in areas such as finance, marketing or human resources or in the sale of a particular product or provision of a particular service.

- Specialization in a particular functional area or service is possible through specific university or college training in that area or through previous experience.

- Senior managers in finance usually require a professional accounting designation.

Additional information

- The boundaries of this unit group are defined by the North American Industry Classification System (NAICS). Included are senior managers in the following industries: broadcasting and telecommunications, wholesale trade, retail trade, accommodation and food service, and other services not elsewhere classified.

Classified elsewhere

Related middle managers are classified in the following unit and minor groups:

- *Managers in Art, Culture, Recreation and Sport (051)*
- *Managers in Food Service and Accommodation (063)*
- *Managers in Retail Trade (062)*
- *Other Services Managers (0651)*

Employment requirements

- A university degree or college diploma in business administration, finance or other discipline related to the service provided is usually required.
- Several years of experience as a middle manager in trade, broadcasting or other service are usually required.

0016 Senior Managers – Goods Production, Utilities, Transportation and Construction

Senior managers in this unit group plan, organize, direct, control and evaluate, through middle managers, the overall operations of goods production, utility, transportation and construction companies. They formulate policies which establish the direction to be taken by these companies, either alone or in conjunction with other members of a board of directors.

Example titles

chief executive officer (CEO) – manufacturing company
chief financial officer (CFO) – urban transit system
corporate controller, logging company
executive vice-president – railway
general manager, trucking company
president, residential construction company
publishing house general manager

regional vice-president, petroleum production company
vice-president, finance – mining company
vice-president, marketing – airline
vice-president, operations – electric power company
vice-president, sales – pulp and paper manufacturing

Main duties

Senior managers in this unit group perform some or all of the following duties:

- Establish objectives for the company and formulate or approve policies and programs
- Authorize and organize the establishment of major departments and associated senior staff positions
- Allocate material, human and financial resources to implement company policies and programs; establish financial and administrative controls; formulate and approve promotional campaigns; and approve overall personnel planning
- Select middle managers, directors or other executive staff
- Co-ordinate the work of regions, divisions or departments
- Represent the company or delegate representatives to act on behalf of the company in negotiations or other official functions.

Senior managers in this unit group may specialize in areas such as finance, marketing or human resources or in a particular product area.

Employment requirements

- A university degree or college diploma in engineering, business administration, commerce or other discipline related to the company's product is usually required.
- Several years of experience as a middle manager in goods production, utilities, transportation or construction are usually required.

- Specialization in a particular functional area or product is possible through specific university or college training in that area or through previous experience.
- Senior managers in finance usually require a professional accounting designation.

Additional information

- The boundaries of this unit group are defined by the North American Industry Classification System (NAICS). Included are senior managers in the following industries: fishing, forestry and logging; mining, oil and gas extraction; manufacturing; printing and publishing; construction; transportation and warehousing; and utilities.

Classified elsewhere

Related middle managers are classified in the following unit and minor groups:

- *Managers in Construction and Transportation (071)*
- *Managers in Manufacturing and Utilities (091)*
- *Primary Production Managers (Except Agriculture) (0811)*

0111 Financial Managers

Financial managers plan, organize, direct, control and evaluate the operation of financial and accounting departments. They develop and implement the financial policies and systems of establishments. Financial managers establish performance standards and prepare various financial reports for senior management. They are employed in financial and accounting departments in companies throughout the private sector and in government.

Example titles

controller
director – financial services
director of accounting
finance director
financial administrator

manager, financial control
manager, financial planning and analysis
manager, internal audit services
treasurer

Main duties

Financial managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operation of an accounting, audit or other financial department
- Develop and implement the financial policies, systems and procedures of an establishment
- Prepare or co-ordinate the preparation of financial statements, summaries, and other cost-benefit analyses and financial management reports
- Co-ordinate the financial planning and budget process, and analyze and correct estimates
- Supervise the development and implementation of financial simulation models
- Evaluate financial reporting systems, accounting procedures and investment activities and make recommendations for changes to procedures, operating systems, budgets and other financial control functions to senior managers and other department or regional managers
- Recruit, organize, train and manage staff
- Act as liaison between the organization and its shareholders, the investing public and external financial analysts
- Establish profitability standards for investment activities and handle mergers and/or acquisitions
- Notify and report to senior management concerning any trends that are critical to the organization's financial performance.

- Accounting and audit managers may require a recognized accounting designation (CA, CMA or CGA).
- A master's degree in business administration (concentration in finance), or another master's level management program may be required.
- Several years of experience in accounting, auditing, budgeting, financial planning and analysis or other financial activities are required.

Additional information

- Progression to senior management positions, such as vice-president of finance, is possible with experience.

Classified elsewhere

- *Banking, Credit and Other Investment Managers* (0122)
- Managers of accounting and auditing firms (in 0123 *Other Business Services Managers*)
- *Senior Managers – Financial, Communications and Other Business Services* (0013)

Employment requirements

- A bachelor's degree in business administration, economics, commerce or a related field is required.

0112 Human Resources Managers

Human resources managers plan, organize, direct, control and evaluate the operations of human resources and personnel departments, and develop and implement policies, programs and procedures regarding human resource planning, recruitment, collective bargaining, training and development, occupation classification and pay and benefit administration. They represent management and participate actively on various joint committees to maintain ongoing relations between management and employees. Human resources managers are employed throughout the private and public sectors.

Example titles

administrator, human resources
manager, employer-employee relations
manager, employment equity – human resources
manager, human resources
manager, industrial relations
manager, occupational health and safety

manager, pay and benefits
manager, personnel
manager, personnel services
manager, personnel training and development
manager, recruiting
manager, staff relations

Main duties

Human resources managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of human resources or personnel departments
- Plan human resource requirements in conjunction with other departmental managers
- Co-ordinate internal and external training and recruitment activities
- Develop and implement labour relations policies and procedures and negotiate collective agreements
- Administer employee development, language training and health and safety programs
- Advise and assist other departmental managers on interpretation and administration of personnel policies and programs
- Oversee the classification and rating of occupations
- Organize and conduct employee information meetings on employment policy, benefits and compensation and participate actively on various joint committees
- Direct the organization's quality management program
- Ensure compliance with legislation such as the Pay Equity Act.

Employment requirements

- A bachelor's degree in a field related to personnel management, such as business administration, industrial relations, commerce or psychology
or
Completion of a professional development program in personnel administration is required.
- Several years of experience as a personnel officer or human resource specialist are required.

Additional information

- Progression to senior management positions is possible with experience.
- Other joint committees led by human resources managers may focus on issues such as alcohol or drug addiction.

Classified elsewhere

- *Specialists in Human Resources (1121)*

0113 Purchasing Managers

Purchasing managers plan, organize, direct, control and evaluate the activities of a purchasing department and develop and implement the purchasing policies of a business or institution. They are employed throughout the public and private sectors.

Example titles

contract manager
director, procurement operations
director, purchasing
food purchasing manager

manager, purchasing contracts
material manager
purchasing manager

Main duties

Purchasing managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the purchasing activities of an establishment
- Develop purchasing policies and procedures and control purchasing department budget
- Identify vendors of materials, equipment or supplies
- Evaluate cost and quality of goods or services
- Negotiate or oversee the negotiation of purchase contracts
- Participate in the development of specifications for equipment, products or substitute materials
- Review and process claims against suppliers
- Interview, hire and oversee training of staff.

Employment requirements

- A bachelor's degree or college diploma in business administration, commerce or economics is usually required.
- Purchasing managers responsible for units purchasing specialized materials or business services may require a related degree or diploma. For example, a bachelor's degree or college diploma in engineering may be required for purchasing managers responsible for purchasing industrial products.
- The designation Certified Professional Purchaser (C.P.P.) or registration in the educational program of the Purchasing Management Association of Canada may be required.
- Several years of experience as a purchasing agent or officer are required.

Classified elsewhere

- *Purchasing Agents and Officers* (1225)
- *Retail and Wholesale Buyers* (6233)
- Warehouse managers (in 0721 *Facility Operation and Maintenance Managers*)

0122 Banking, Credit and Other Investment Managers

Banking, credit and other investment managers plan, organize, direct, control and evaluate the activities of financial establishments or operational departments within such establishments, or credit departments in industrial and commercial establishments. They oversee business development and manage overall performance in accordance with established strategic directions and policies. Banking managers are employed by banks, trust companies and credit unions. Credit managers are employed by credit departments in department stores, utility companies, car dealerships, insurance companies or other industrial or commercial organizations. Other investment managers are employed by credit card companies, consumer loan companies, mutual fund investment firms, mortgage investment companies or other financial establishments concerned with extending loans and financing and investments.

Example titles

bank manager	manager, credit card centre
collection centre manager	manager, personal services – banking, credit and investment
commercial banking manager	mortgage and consumer credit manager
corporate banking centre manager	operations manager, credit card company
credit manager	regional collection manager
credit union manager	trust company manager
manager, banking operations	
manager, corporate services – banking, credit and investment	

Main duties

Banking managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the branch operations of a bank, trust company, credit union or similar financial institution or of a department in such an institution responsible for administering personal and commercial loans, buying and selling securities, operating investment funds, administering trusts, settling estates or other related activities
- Ensure the institution's policies and procedures are followed according to established guidelines and make recommendations for improvement
- Network to develop business relations, promote the sale of loan, investment and other banking services and attract corporate and individual customers
- Interview corporate and individual customers and respond to customer enquiries
- Analyze, review and approve or reject loan and credit applications in accordance with authorized limits
- Monitor processing of loan applications and credit investigations
- Oversee preparation of monthly financial and branch progress reports
- Recruit personnel and identify their training needs.

Credit managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of a credit department in an industrial or commercial organization
- Administer corporate, commercial and personal loan accounts
- Advise customers on the commercial and personal financial services corresponding to their needs
- Evaluate and review loan and credit applications and collateral and make recommendations
- Approve or reject credit applications, establish credit limits and determine repayment plans or schedules in accordance with authorized limits
- Ensure collection of overdue or delinquent accounts
- Ensure credit policies and procedures are followed according to established guidelines and applicable legislation
- Prepare credit and loan reports
- Recruit credit personnel and identify their training needs.

Employment requirements

- A university degree or college diploma in business administration, commerce, economics or a related field is usually required.

0122 Banking, Credit and Other Investment Managers

- A master's degree in business administration (M.B.A.) or finance (M.Sc.) may be required for the management of large commercial loans.
- Completion of company or other management training programs is usually required.
- Several years of experience within the industry, including supervisory experience, are required.

Additional information

- Progression to senior management positions in this field is possible with experience.

Classified elsewhere

- Mortgage brokerage managers (in 0121 *Insurance, Real Estate and Financial Brokerage Managers*)
- *Other Business Services Managers* (0123)
- *Senior Managers – Financial, Communications and Other Business Services* (0013)

0123 Other Business Services Managers

Managers in this unit group plan, organize, direct, control and evaluate the operations of establishments that provide services to business, and ensure the quality of those services and client satisfaction. They work in such fields as management consulting, market research, personnel services, payroll services, advertising services and security services.

Example titles

accounting firm manager
employment agency manager
legal firm manager
manager, management consulting service
manager, market research service

manager, nursing registry
payroll service manager
personnel agency manager
professional services manager – business services
security service manager

Main duties

Managers in this unit group perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of establishments that provide services to business such as management consulting, market research, personnel services, payroll services, advertising services or security services
- Plan, develop and organize the policies and procedures of these establishments
- Develop action plans, provide expertise in response to client needs, and support and advise project teams
- Direct and advise staff in the development and implementation of sales or marketing strategies
- Plan, administer and control budgets for client projects, contracts, equipment and supplies
- Represent the company within various economic and social organizations
- Assist staff with administrative or technical problems
- Hire, train and supervise staff.

Employment requirements

- A bachelor's degree or college diploma in a field related to the business service provided is usually required.
- Several years of experience in a field related to the business service provided are usually required.
- Licences, certificates or registration may be required for some business services managers. For example, accounting firm managers usually require accounting certification.
- University studies in business administration may be required.

Classified elsewhere

- *Architecture and Science Managers (0212)*
- *Banking, Credit and Other Investment Managers (0122)*
- *Computer and Information Systems Managers (0213)*
- *Engineering Managers (0211)*
- *Insurance, Real Estate and Financial Brokerage Managers (0121)*
- *Senior Managers – Financial, Communications and Other Business Services (0013)*

0131 Telecommunication Carriers Managers

This unit group includes managers who plan, organize, direct, control and evaluate the operations of a telecommunications establishment, department or facility. They are employed by wired, wireless, satellite and other telecommunications carriers.

Example titles

director, switching systems
facilities manager, telecommunications
installation manager, telecommunications
manager, network installation
manager, telecommunications services
microwave facilities manager

network operations manager
network services manager
operations and transmission services manager
regional manager – telecommunications system
telecommunications manager
telephone company district manager

Main duties

Telecommunication carriers managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of a telecommunications establishment, department or facility
- Consult with senior managers to establish policies concerned with the development, operation and maintenance of telecommunications services
- Direct and control telecommunications traffic volume and flow within assigned area, through subordinate supervisors and technical staff
- Analyze and evaluate telecommunications installation, operation and maintenance services and make recommendations for improvement
- Ensure compliance with telecommunications regulations and directives of government regulatory agencies
- Liaise with representatives of related or connecting companies to resolve joint telecommunications problems and ensure efficient telecommunications system operations
- Recruit personnel and oversee their training.

Employment requirements

- A university degree in science, electrical engineering or a related field is usually required.
- Several years of experience in a related technical profession, including supervisory experience, are usually required.

Additional information

- Progression to senior management positions in telecommunications is possible with experience.

Classified elsewhere

- Broadcasting managers (in 0512 *Managers – Publishing, Motion Pictures, Broadcasting and Performing Arts*)
- Senior Managers – Financial, Communications and Other Business Services (0013)

0132 Postal and Courier Services Managers

Postal and courier services managers plan, organize, direct, control and evaluate the activities and operations in postal facilities and in establishments that provide courier services. They are employed by Canada Post Corporation and by courier companies.

Example titles

courier service manager
mail processing plant manager
manager, collection and delivery operations
manager, mail operations
messenger service manager

parcel processing plant manager
postal station superintendent
post office manager
production control manager – postal service

Main duties

Postal and courier services managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities and operations of postal facilities and courier service companies, or of operational divisions within Canada Post and courier service companies
- Co-ordinate the duties of supervisors and other staff
- Manage the accurate and expedient movement of mail and parcels through postal and parcel sorting facilities
- Review effectiveness of assigned operations and implement changes to postal and courier operations
- Prepare and submit budget estimates and administer the expenditures of postal and courier facilities
- Interview, hire and provide training for staff.

Classified elsewhere

- Postmasters (in 1214 *Supervisors, Mail and Message Distribution Occupations*)

Employment requirements

- A university degree or college diploma is usually required.
- Several years of supervisory experience or operational experience within a postal or courier facility are usually required.

0211 Engineering Managers

Engineering managers plan, organize, direct, control and evaluate the activities of an engineering department, service or firm. They are employed by a wide range of private sector and government establishments and by consulting engineering and scientific research companies.

Example titles

director, engineering research and development
electrical engineering service manager
engineering department manager

engineering manager
manager, telecommunications engineering service
production engineering manager

Main duties

Engineering managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities and operations of an engineering department, service or firm
- Develop and implement policies, standards and procedures for the engineering and technical work performed in the department, service, laboratory or firm
- Consult and negotiate with clients to prepare specifications, explain proposals and present engineering reports and findings
- Assign, co-ordinate and review the technical work of the department or project teams
- Recruit personnel and oversee development and maintenance of staff competence in required areas
- May participate directly in the design, development and inspection of technical projects or in the engineering work of the department.

Additional information

- Mobility to other technical managerial positions or to research or senior management positions is possible with experience.

Classified elsewhere

- *Architecture and Science Managers* (0212)
- *Computer and Information Systems Managers* (0213)
- *Construction Managers* (0711)
- Engineers and supervisors of engineers (in 21 *Professional Occupations in Natural and Applied Sciences*)
- *Manufacturing Managers* (0911)
- *Transportation Managers* (0713)
- *Utilities Managers* (0912)

Employment requirements

- A bachelor's degree in engineering or a college diploma in engineering technology is required.
- Extensive experience in an engineering discipline, including supervisory experience, is required.
- Registration as a Professional Engineer (P. Eng.) by a provincial or territorial association of professional engineers or certification as an engineering technologist (CET) is usually required.

0212 Architecture and Science Managers

Architecture and science managers plan, organize, direct, control and evaluate the activities of an architecture, landscape architecture, scientific or statistical department, service or firm. They are employed by a wide range of private sector and government establishments as well as by architectural firms and scientific research companies.

Example titles

architectural manager

chief actuary

director, agricultural chemistry branch

director of architecture

director of research – forestry

director of research – manufacturing

director of research – mining

landscape architecture manager

manager, life sciences program

manager, petroleum geology department

scientific research department manager

statistical service manager

Main duties

Architecture and science managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities and operations of an architecture, landscape architecture, scientific research and development laboratory or quality control department, service or firm
- Develop and implement policies, standards and procedures for the architectural, scientific and technical work performed in the department, service, laboratory or firm
- Assign, co-ordinate and review the technical work of the department or project teams
- Recruit personnel and oversee development and maintenance of staff competence in required areas
- May participate directly in the design, development and inspection of technical projects or in the theoretical or applied scientific work of the department
- May consult and negotiate with clients to prepare specifications, explain proposals or present architectural or scientific research reports and findings.

- Landscape architecture managers require a degree in landscape architecture, licensing as a professional landscape architect and several years of experience as a landscape architect.

Additional information

- Progression to senior management positions in the respective fields is possible with experience.

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Engineering Managers* (0211)
- *Primary Production Managers (Except Agriculture)* (0811)
- Science professionals and supervisors of science professionals (in 21 *Professional Occupations in Natural and Applied Sciences*)

Employment requirements

- Architecture managers require a degree in architecture, registration as a professional architect and several years of experience as an architect.
- Science and other managers in this unit group require a master's or doctoral degree in a scientific discipline and several years of experience in a related scientific discipline.

0213 Computer and Information Systems Managers

Computer and information systems managers plan, organize, direct, control and evaluate the activities of organizations that analyze, design, develop, implement, operate and administer computer and telecommunications software, networks and information systems. They are employed throughout the public and private sectors.

Example titles

computer systems manager

data centre manager

data processing director

EDP (electronic data processing) manager

information systems manager

manager, data processing and systems analysis
manager, management information system (MIS)
manager, software engineering
software development manager
systems development manager

Main duties

Computer and information systems managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of information systems and electronic data processing (EDP) departments and companies
- Develop and implement policies and procedures for electronic data processing and computer systems operations and development
- Meet with clients to discuss system requirements, specifications, costs and timelines
- Assemble and manage teams of information systems personnel to design, develop, implement, operate and administer computer and telecommunications software, networks and information systems
- Control the budget and expenditures of the department, company or project
- Recruit and supervise computer analysts, engineers, programmers, technicians and other personnel and oversee their professional development and training.

Classified elsewhere

- Computer and information systems supervisors (in 217 *Computer and Information Systems Professionals*)
- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Programmers and Interactive Media Developers* (2174)
- Computer services company presidents (in 0013 *Senior Managers – Financial, Communications and Other Business Services*)
- *Database Analysts and Data Administrators* (2172)
- *Information Systems Analysts and Consultants* (2171)
- LAN managers (in 2281 *Computer Network Technicians*)
- *Software Engineers and Designers* (2173)

Employment requirements

- A bachelor's or master's degree in computer science, business administration, commerce or engineering is usually required.
- Several years of experience in systems analysis, data administration, software engineering, network design or computer programming, including supervisory experience, are required.

0311 Managers in Health Care

This unit group includes managers who plan, organize, direct, control and evaluate the delivery of health care services, such as diagnosis and treatment, nursing and therapy, within institutions that provide health care services. They are employed in hospitals, medical clinics, nursing homes and other health care establishments.

Example titles

chief of anesthesia
chief of emergency medicine
chief of medical staff
director, home care services
director of clinical medicine
director of dietetics
director of laboratory medicine

director of nursing – medical services
director of occupational therapy
director of physiotherapy
director of surgery
director, rehabilitation services
medical clinic director
mental health residential care program manager

Main duties

Managers in health care perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the delivery of health care services within a department or establishment
- Consult with boards of directors and senior managers to maintain and establish standards for the provision of health care services
- Develop evaluation systems to monitor the quality of health care given to patients
- Monitor the use of diagnostic services, in-patient beds and facilities to ensure effective use of resources
- Develop and implement plans for new programs, special projects, new material and equipment acquisitions and future staffing levels in their department or establishment
- Plan and control departmental or establishment budget
- Represent the department or establishment at meetings with government officials, the public, the media and other organizations
- Supervise health care supervisors and professionals
- Recruit health care staff of the department or establishment.

Managers in health care specialize in administering the provision of specific health care services such as dietetics, clinical medicine, laboratory medicine, nursing, physiotherapy or surgery.

Employment requirements

- Administrators of departments such as surgery, clinical medicine or laboratory medicine are usually required to have the education and training of a specialist physician.
- Administrators of other departments, such as nursing, dietetics or physiotherapy, are usually required to have the education and training of the medical professionals in that department.
- Several years of experience in the relevant profession, including supervisory experience, are usually required.
- Certification in the relevant profession is required.

Additional information

- There is little or no mobility between departments in different medical specializations.
- Progression to senior management positions in health care services is possible with experience.

Classified elsewhere

- *Government Managers – Health and Social Policy Development and Program Administration (0411)*
- *Senior Managers – Health, Education, Social and Community Services and Membership Organizations (0014)*

0312 Administrators – Post-Secondary Education and Vocational Training

This unit group includes faculty administrators and registrars of colleges or universities and administrators of vocational training schools. Faculty administrators manage the academic and related activities of faculties of colleges or universities. Registrars manage registration activities and academic records systems of colleges or universities. Administrators of vocational training schools manage the operations of vocational schools specializing in trades, technology, business or other vocational subjects.

Example titles

community college dean
dean, faculty of science
dean of adult education
dean, school of nursing
dean, school of technology
dean – university or college

manager, aviation school
manager, business school
manager, trade school
registrar, community college
student activities dean
university registrar

Main duties

Faculty administrators perform some or all of the following duties:

- Plan, organize, direct, control and evaluate academic and related activities of a college or university faculty
- Recommend and approve faculty appointments
- Recommend curriculum revisions and additions and approve scheduling of courses
- Direct, through subordinate staff, activities such as research and curriculum development
- Plan, administer and control budgets for projects, programs, support services and equipment
- Advise president or rector of university or college
- Participate in activities of various faculty and college committees.

Registrars perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the registration activities and academic records system of a college or university
- Review registration statistics and consult with faculty officials to develop registration policies
- Direct activities of staff and others engaged in compiling information on courses, schedules and requirements for admission and graduation.

Administrators of vocational training schools perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of a private college or institute specializing in trades, technology or business
- Develop curriculum for training programs

- Consult with government regulatory and licensing agencies to ensure conformance to provincial standards
- Plan, administer and control budgets for projects, programs, support services and equipment
- May recruit and hire teachers and other staff
- May teach.

Employment requirements

- Faculty administrators require a graduate degree in a field related to the academic faculty and
Several years of experience as a university professor or college teacher.
- Registrars require an undergraduate degree in business administration or a related field and
Several years of experience in registration administration.
- Administrators of vocational training schools usually require an undergraduate degree in business administration
or
Expertise and certification in a subject of instruction.

Additional information

- There is no mobility among the various types of administrators in this group.
- Progression to some senior management positions in education is possible with experience.

0312 Administrators – Post-Secondary Education and Vocational Training

Classified elsewhere

- Administrators of non-vocational training schools, such as driving schools (in 0651 *Other Services Managers*)
- *College and Other Vocational Instructors* (4131)
- College rectors (in 0014 *Senior Managers – Health, Education, Social and Community Services and Membership Organizations*)
- *School Principals and Administrators of Elementary and Secondary Education* (0313)
- University presidents (in 0014 *Senior Managers – Health, Education, Social and Community Services and Membership Organizations*)
- *University Professors* (4121)

0313 School Principals and Administrators of Elementary and Secondary Education

School principals plan, organize, direct, control and evaluate the activities of teachers and other staff of an elementary or secondary school. They are employed by public and private schools. Administrators of elementary and secondary education plan, organize, direct, control and evaluate the academic affairs of a school system. They are employed by school boards.

Example titles

administrator, board of education

chief superintendent – schools

director of education, correctional institution

director of school for the hearing impaired

district school superintendent

headmaster/mistress, private school

school principal

secondary school principal

superintendent of elementary education

superintendent of secondary schools

superintendent of special education

vice-principal, school

Main duties

School principals perform some or all of the following duties:

- Plan, organize, direct, control and evaluate, through department heads or supervisors, the activities of teachers and support staff
- Review programs to ensure conformance to school board or provincial standards and develop programs within limits of authority
- Co-ordinate teaching activities of the institution by making personnel assignments, determining class size and preparing timetables
- Organize and maintain procedures for the keeping of records
- Prepare and administer institution or program budget
- Direct and co-ordinate school maintenance services and the use of school facilities
- May recruit and hire teachers and other staff
- May teach.

Administrators of elementary and secondary education perform some or all of the following duties:

- Plan, organize, direct, control and evaluate, through school principals, the academic affairs of a school district
- Evaluate curriculum, teaching methods and community participation in programs for a school district and revise programs as required
- Develop and administer programs for the education and training of students and adults
- Make recommendations concerning the annual operating budget of a school district

- Direct or supervise the recruitment, appointment, training, evaluation and promotion of teaching personnel.

Employment requirements

- A bachelor's degree in education is required.
- A master's degree in education may be required.
- Several years of experience as a senior teacher or department head are required.
- A teacher's certificate for the province of employment is required.
- School principals may require a principal's certificate.
- Administrators of elementary and secondary education may require a supervisory officer certificate.

Additional information

- There is little mobility between institutional settings, for example, between elementary and secondary schools.

Classified elsewhere

- *Administrators – Post-Secondary Education and Vocational Training (0312)*
- *Education Policy Researchers, Consultants and Program Officers (4166)*
- *Government Managers – Education Policy Development and Program Administration (0413)*
- *Senior Managers – Health, Education, Social and Community Services and Membership Organizations (0014)*

0314 Managers in Social, Community and Correctional Services

This unit group includes managers who plan, organize, direct, control and evaluate the programs and activities of social service and community agencies, correctional institutions, counselling departments, labour organizations, professional associations, political parties and non-governmental organizations.

Example titles

administrator, child welfare services	labour organization manager
area manager, family services	membership services manager
association director	political organization manager
children's aid society director	prison warden
correctional institution director	regional administrator, social services
detention centre director	social assistance director
director, community centre	social work director
director, correctional treatment and training	trade association manager
environmental group director	volunteer services director
income maintenance director	

Main duties

Managers in this unit group perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the delivery of social and community service programs such as income maintenance, children's aid and emergency housing services
- Manage the operations and activities of correctional facilities and detention centres
- Administer the programs of non-governmental organizations involved with social issues such as health care, human rights, consumer protection, international development and environmental protection
- Administer programs of membership organizations such as political parties, labour organizations, business and professional associations
- Establish administrative procedures to meet objectives set by board of directors or senior management
- Direct and advise professional and non-professional staff delivering services and programs to the general public and to the organization or association membership
- Plan, administer and control budgets for programs, equipment and support services
- Represent their respective organizations for the purpose of government liaison and media relations
- Participate in policy development by preparing reports and briefs for management committees and working groups

- Hire and provide training for professional and non-professional staff.

Employment requirements

- Managers in social, community and correctional services usually require a master's degree in a social science or administrative discipline and
Several years of experience in a related occupation, such as a community and social service worker, social or health policy researcher, consultant or program officer, probation or parole officer, or social worker.
- Managers of associations and membership organizations require extensive experience in a related occupation, trade or industry.

Additional information

- Progression to senior management positions in social, community and correctional services is possible with additional training and experience.

Classified elsewhere

- *Government Managers – Health and Social Policy Development and Program Administration* (0411)
- *Senior Managers – Health, Education, Social and Community Services and Membership Organizations* (0014)

0411 Government Managers – Health and Social Policy Development and Program Administration

Government managers in this unit group plan, organize, direct, control and evaluate the development and administration of health care policies, social policies and related programs designed to protect and promote the health and social welfare of individuals and communities. These managers are employed by government departments and agencies.

Example titles

city medical officer of health
director, health information and promotion
director, housing policy and development
immigration and settlement director

manager, health program operations
manager, social services planning
social services director – government services

Main duties

Government managers in health and social policy development and program administration perform some or all of the following duties:

- Participate in the development of health or social policies by providing advice to senior government managers
- Organize departmental unit and establish procedures to meet departmental objectives set by senior management
- Direct and advise health or social policy researchers, consultants or program officers who conduct research, prepare documents or administer programs for individuals and communities in areas such as health and social services, employment and immigration, labour or housing
- Plan, administer and control budgets for research and administration, support services and equipment and supplies
- Organize and direct committees and working groups to plan, manage or evaluate health and social services projects and programs
- Interview, hire and provide training for staff.

- For some government managers in health policy development and program administration, certification in the relevant health profession is required. For example, city medical officers of health must be physicians.

Government managers in social policy development and program administration

- A bachelor's degree or a college diploma in a social science discipline, such as sociology or economics, or an administrative discipline, such as public administration, is required.
- A graduate degree in a social science or an administrative discipline may be required.
- Several years of experience as a social policy researcher, consultant or program officer are usually required.

Additional information

- Progression to senior management positions in the health and social policy fields is possible with experience.

Employment requirements

Government managers in health policy development and program administration

- A bachelor's degree or college diploma in health science, hospital administration or public administration or a bachelor's degree in social science is required.
- A graduate degree in a health, social science or an administrative discipline may be required.
- Several years of experience as a health or social policy researcher, consultant or program officer are usually required.

0411 Government Managers – Health and Social Policy Development and Program Administration

Classified elsewhere

- *Government Managers – Economic Analysis, Policy Development and Program Administration (0412)*
- *Government Managers – Education Policy Development and Program Administration (0413)*
- *Managers in Health Care (0311)*
- *Managers in Social, Community and Correctional Services (0314)*
- *Other Managers in Public Administration (0414)*
- Program managers in government (in 416 *Policy and Program Officers, Researchers and Consultants*)
- *Senior Government Managers and Officials (0012)*

0412 Government Managers – Economic Analysis, Policy Development and Program Administration

Government managers in this unit group plan, organize, direct, control and evaluate economic policy, research and programs in areas of government activity such as taxation, international trade, labour markets, transportation or agriculture. They also plan and direct policies and programs to promote industrial and commercial business development in urban and rural areas. They are employed in government departments and agencies.

Example titles

chief, economic analysis
chief, forest resource analysis
customs manager
director, business development
director, economic development
director, economic policy analysis
director, energy market analysis
director, excise tax programs

director, farm products marketing
international trade policy manager
manager, grain market analysis
manager, revenue programs
manager, tax policy research
taxation manager
tourism development director
trade development director

Main duties

Government managers in economic analysis and program administration perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the development of economic policy research projects and economic programs
- Participate in the development of departmental policies by providing advice to senior government managers
- Organize departmental unit and establish procedures to meet departmental objectives set by senior management
- Direct and advise economists and other professional staff who conduct economic research, prepare reports or administer programs in areas of government activity such as taxation, international trade, labour, transportation or agriculture
- Direct and advise economic development officers or other staff administering programs to promote industrial and commercial business investment in urban or rural areas
- Plan, administer and control research and administration budgets for projects, support services, equipment or supplies
- Organize and direct committees evaluating departmental or agency projects or programs
- Interview, hire and oversee training and professional development.

Employment requirements

- A bachelor's degree in economics, business administration, commerce or public administration is required.
- A master's degree in economics or a related field may be required.
- Several years of experience as an economist, economic development officer or socio-economic researcher are required.

Additional information

- Progression to senior management positions is possible with experience.

Classified elsewhere

- *Business Development Officers and Marketing Researchers and Consultants* (4163)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Financial Managers* (0111)
- *Government Managers – Health and Social Policy Development and Program Administration* (0411)
- Labour policy analysts (in 4164 *Social Policy Researchers, Consultants and Program Officers*)
- Program managers in government (in 416 *Policy and Program Officers, Researchers and Consultants*)
- *Senior Government Managers and Officials* (0012)

0413 Government Managers – Education Policy Development and Program Administration

Government managers in this unit group plan, organize, direct, control and evaluate the development and administration of elementary, secondary and post-secondary education policies and programs. They are employed by government departments and agencies.

Example titles

director, education curriculum development
director, education policy analysis and research
director, school inspection

education director
manager, education program administration

Main duties

Government managers in this unit group perform some or all of the following duties:

- Participate in the development of education policy by providing advice to senior government managers
- Organize departmental unit and establish procedures to meet departmental objectives set by senior management
- Direct and advise policy researchers or program officers conducting research, preparing documents or administering programs for elementary and secondary school systems
- Plan, administer and control budgets for projects, programs, support services and equipment
- Organize and direct committees and working groups to plan, manage or evaluate education projects and programs
- Interview, hire and provide training for staff.

Employment requirements

- A bachelor's degree in education is required.
- A master's degree in a particular educational specialization may be required.
- Several years of combined experience as a school teacher and as a government educational policy researcher, consultant or program officer are usually required.
- A provincial teaching certificate is usually required.

Additional information

- Progression to senior management positions in education is possible with experience.

Classified elsewhere

- *Administrators – Post-Secondary Education and Vocational Training* (0312)
- *Government Managers – Health and Social Policy Development and Program Administration* (0411)
- *Program managers in government (in 416 Policy and Program Officers, Researchers and Consultants)*
- *School Principals and Administrators of Elementary and Secondary Education* (0313)
- *Senior Government Managers and Officials* (0012)

0414 Other Managers in Public Administration

Managers in this unit group plan, organize, direct, control and evaluate the development of policies and programs which govern the daily operations of legislatures and other activities unique to government such as intergovernmental affairs and elections. They are employed by government departments, agencies and legislative bodies.

Example titles

clerk of the committee, Legislative Assembly
director, elections planning

director, federal-provincial relations
director, intergovernmental affairs

Main duties

Managers in this unit group perform some or all of the following duties:

- Participate in the development of policies and programs by providing advice to senior government managers of legislatures or departments or agencies involved in activities unique to government
- Organize government unit or agency and establish procedures to meet objectives set by senior management
- Direct and advise professional and non-professional staff conducting research, preparing documents or providing administrative support
- Plan, administer and control research and administration budgets for projects, programs, equipment and supplies
- Organize and direct committees and working groups to plan, manage or evaluate projects and programs
- Interview, hire and provide training for staff.

Employment requirements

- A bachelor's degree in a social science discipline, law or business administration is required.
- Several years of experience in government policy development, research or program administration, or in a professional occupation in social science, law or business administration are usually required.

Additional information

- Progression to senior management positions in this field is possible with experience.

Classified elsewhere

- *Administrative Services Managers* (011)
- *Government Managers – Economic Analysis, Policy Development and Program Administration* (0412)
- *Government Managers – Education Policy Development and Program Administration* (0413)
- *Government Managers – Health and Social Policy Development and Program Administration* (0411)
- Program managers in government (in 416 *Policy and Program Officers, Researchers and Consultants*)
- *Senior Government Managers and Officials* (0012)

0511 Library, Archive, Museum and Art Gallery Managers

This unit group includes managers who plan, organize, direct, control and evaluate the activities of libraries, archives, museums, art galleries or departments within such institutions. They are employed in libraries, archives, museums and non-retail art galleries.

Example titles

archives director
assistant director of archives
chief librarian
executive director, museum

library director
manager, art gallery
museum administrator

Main duties

Library, archive, museum and art gallery managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of a library or library system, archive or archive system, museum or art gallery or a technical department within such an institution
- Develop and administer policies and programs
- Prepare and administer budgets
- Develop, promote and implement public relations and promotional programs
- Prepare funding and grant applications and proposals
- Prepare operational and financial reports, analyses and recommendations
- Recruit and provide training for professional, technical and clerical staff
- May perform the duties of a librarian, archivist or curator in smaller institutions.

Library, archive, museum and art gallery managers may specialize in a specific type of collection.

Employment requirements

Library managers

- A graduate degree in library and information science
- and
- Several years of experience as a librarian, including supervisory experience are required.

Archive managers

- A graduate degree in archival science or history
- and
- Several years of experience as an archivist or in historical research, including supervisory experience are required.

Museum and art gallery managers

- A graduate degree related to a particular collection or a training program in arts administration
- and
- Several years of experience as a curator, conservator or artist or experience in other related museum and art gallery work are usually required.

Additional information

- There is mobility between library and archive managers and between museum and art gallery managers.

Classified elsewhere

- *Archivists (5113)*
- *Conservators and Curators (5112)*
- *Librarians (5111)*

0512 Managers – Publishing, Motion Pictures, Broadcasting and Performing Arts

Managers in this unit group plan, organize, direct, control and evaluate operations within publishing firms, film, theatre and record production companies and broadcasting facilities. They are employed by radio and television stations, by newspaper, periodical and book publishing firms, and by film, theatre, record and video production companies.

Example titles

ballet company director	opera company director
book publishing manager	publishing manager
broadcasting manager	radio programming manager
copyright manager – publishing	station manager, broadcasting
dance company director	television station manager
editor-in-chief	theatre company manager
manager, radio station	video production company manager
managing editor	

Main duties

Managers in this unit group perform some or all of the following duties:

- Establish procedures and implement policies in newspaper and publishing firms, in film, theatre, record and video production companies, and in radio and television stations
- Plan and maintain production schedules for publications, films, broadcasts, and theatre, record and video productions
- Prepare and control budgets
- Hire and supervise staff
- Consult with government regulatory agencies to evaluate and review programs and policies to ensure conformance to regulations
- Initiate or approve development of articles, books, films, broadcasts, musical recordings and theatre productions, and liaise with authors, composers, producers and directors.

Employment requirements

- A university degree or college diploma in communications, broadcasting, journalism or other arts discipline is usually required.
- Several years of experience within the publishing, film production, broadcasting or theatre industry are usually required.

Classified elsewhere

- *Producers, Directors, Choreographers and Related Occupations* (5131)
- Publishers (in 0016 *Senior Managers – Goods Production, Utilities, Transportation and Construction*)
- *Senior Managers – Trade, Broadcasting and Other Services, n.e.c.* (0015)

0513 Recreation, Sports and Fitness Program and Service Directors

This unit group includes managers who plan, organize, direct, control and evaluate the operations of comprehensive recreational, sports and fitness programs and services, national or provincial sports governing agencies and professional athletic teams. They are employed by municipalities, community and private recreational and fitness organizations, sports governing agencies and professional athletic team organizations.

Example titles

director of recreation
director of sports administration
professional football team manager
professional hockey team manager
professional track and field team manager
recreation director

sports association director
sports federation director
sports program director
YMCA (Young Men's Christian Association)
programs director

Main duties

Managers and directors in this unit group perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of recreation, sports and fitness programs and services
- Provide technical and professional advice on recreation, sports and fitness matters
- Prepare budget estimates and develop policies and procedures to implement programs
- Manage the operations of a sports governing agency
- Organize and administer national and provincial training, coaching, officiating and other programs associated with a particular sport
- Manage the operations of a professional athletic team
- Recruit professional coaches and athletes
- Direct fundraising drives and arrange for sponsorships from public and private organizations
- Develop long range plans and negotiate business contracts.

- Executive directors of sports governing agencies may be required to have coaching certification in a particular sport.

Classified elsewhere

- *Coaches (5252)*
- *Program Leaders and Instructors in Recreation, Sport and Fitness (5254)*
- *Recreation, Sports and Fitness Program Supervisors and Consultants (4167)*
- *Sports Officials and Referees (5253)*

Employment requirements

- A university degree in recreation, physical education, sports administration or a related field
or
A college diploma in recreation management or sports administration is usually required.
- Several years of experience in an occupation related to recreation and sports administration, consulting or programming are usually required.
- Some directors of recreation may be required to have a Municipal Recreation Director's Certificate.

0611 Sales, Marketing and Advertising Managers

Sales, marketing and advertising managers plan, organize, direct, control and evaluate the activities of establishments and departments involved in commercial, industrial, wholesale and e-business sales, marketing, advertising and public relations. They are employed by commercial, industrial and wholesale establishments, marketing and public relations consulting companies and government departments.

Example titles

advertising director
advertising manager
corporate sales manager
director, communications
director, media relations
director, public relations
fundraising campaign manager
Internet communications manager

manager, e-business
marketing manager
promotions manager
regional sales manager
sales and marketing manager
Web communications manager
Web marketing manager

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Sales managers plan, direct and evaluate the activities of sales departments in commercial, industrial, wholesale and other non-retail establishments.
- Marketing managers establish distribution networks for products and services, initiate market research studies and analyze their findings, assist in product development, and direct and evaluate the marketing strategies of establishments.
- Advertising managers plan, direct and evaluate the activities of firms and departments that develop and implement advertising campaigns to promote the sales of products and services.
- Public relations managers direct and evaluate establishments and departments that develop and implement communication strategies and information programs, publicize activities and events, and maintain media relations on behalf of businesses, governments and other organizations.
- E-business managers plan, organize, direct, control and evaluate the design, development and maintenance of Internet and Intranet sites to manage an organization's Internet presence including public relations, communications and commercial activities.

Employment requirements

Sales and marketing managers

- A university degree or college diploma in business administration or in a related field with a specialization in sales or marketing
and
Several years of experience as a sales or marketing representative or in a related occupation are required.

Advertising and public relations managers

- A university degree or college diploma in public relations, communications, marketing, journalism or in a related field
and
Several years of experience as an advertising officer, public relations officer or communications officer or in a related occupation are required.

E-business managers

- A university degree or college diploma in a field related to Web site content
and
Experience in Web site design, interactive media development, data administration or information systems analysis or experience related to Web site content are usually required.

Additional information

- Progression to senior management positions is possible with experience.

0611 Sales, Marketing and Advertising Managers

Classified elsewhere

- *Professional Occupations in Public Relations and Communications* (5124)
- *Retail Trade Managers* (0621)
- *Retail Trade Supervisors* (6211)
- *Senior Managers – Trade, Broadcasting and Other Services, n.e.c.* (0015)
- Supervisor of Technical Salespersons (in 6221 *Technical Sales Specialists – Wholesale Trade*)
- Wholesale Trade Representatives Supervisor (in 6411 *Sales Representatives – Wholesale Trade (Non-Technical)*)

0621 Retail Trade Managers

Retail trade managers plan, organize, direct, control and evaluate the operations of establishments that sell merchandise or services on a retail basis. Retail trade managers are employed by retail sales establishments or they may own and operate their own store.

Example titles

antique dealer
assistant manager – retail
bookstore manager
car dealership manager
clothing store manager
department store manager
pleasure boat dealer

service station manager
sporting goods store manager
store manager – retail
supermarket manager
travel agency manager
variety store manager

Main duties

Retail trade managers perform some or all of the following duties:

- Plan, direct and evaluate the operations of establishments engaged in retail sales or of departments in such establishments
- Manage staff and assign duties
- Study market research and trends to determine consumer demand, potential sales volumes and effect of competitors' operations on sales
- Determine merchandise and services to be sold, and implement price and credit policies
- Locate, select and procure merchandise for resale
- Develop and implement marketing strategies
- Plan budgets and authorize expenditures
- Resolve customer complaints
- Determine staffing requirements and hire or oversee hiring of staff.

Employment requirements

- Completion of secondary school is required.
- A university degree or college diploma in business administration or other field related to the product or service being sold may be required.
- Several years of related retail sales experience at increasing levels of responsibility are usually required.

Additional information

- There is some mobility between managers in this unit group, depending on the product or service.

Classified elsewhere

- *Insurance, Real Estate and Financial Brokerage Managers (0121)*
- *Restaurant and Food Service Managers (0631)*
- *Retail Trade Supervisors (6211)*
- *Sales, Marketing and Advertising Managers (0611)*

0631 Restaurant and Food Service Managers

Restaurant and food service managers plan, organize, direct, control and evaluate the operations of restaurants, bars, cafeterias and other food and beverage services. They are employed in food and beverage service establishments, or they may be self-employed.

Example titles

assistant manager, restaurant
banquet manager
bar manager
cafeteria manager
catering service manager

dining room manager
food services manager
hotel food and beverage service manager
restaurant manager
restaurateur – food services

Main duties

Restaurant and food service managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of a restaurant, bar, cafeteria or other food or beverage service
- Determine type of services to be offered and implement operational procedures
- Recruit staff and oversee staff training
- Set staff work schedules and monitor staff performance
- Control inventory, monitor revenues and modify procedures and prices
- Resolve customer complaints and ensure health and safety regulations are followed
- Negotiate arrangements with suppliers for food and other supplies
- Negotiate arrangements with clients for catering or use of facilities for banquets or receptions.

Additional information

- Progression to senior management in food service is possible with experience.

Classified elsewhere

- *Dietitians and Nutritionists* (3132)
- *Executive chefs* (in 6241 *Chefs*)
- *Food Service Supervisors* (6212)
- Senior managers in food service (in 0015 *Senior Managers – Trade, Broadcasting and Other Services, n.e.c.*)

Employment requirements

- Completion of a college or other program related to hospitality or food and beverage service management is usually required.
- Several years of experience in the food service sector, including supervisory experience, are required.

0632 Accommodation Service Managers

Accommodation service managers plan, organize, direct, control and evaluate the operations of an accommodation establishment or of a department within such an establishment. They are employed by hotels, motels, resorts, student residences and other accommodation establishments, or they may be self-employed.

Example titles

assistant manager, hotel
bed and breakfast operator
front desk manager
guest-house operator
hotel director
hotel manager

motel manager
reservations manager
seasonal resort manager
ski resort manager
tourist home operator

Main duties

Accommodation service managers perform some or all of the following duties:

- Develop, implement and evaluate policies and procedures for the operation of the department or establishment
- Prepare budgets and monitor revenues and expenses
- Participate in the development of pricing and promotional strategies
- Negotiate with suppliers for the provision of materials and supplies
- Negotiate with clients for the use of facilities for conventions, banquets, receptions and other functions
- Recruit and supervise staff, oversee training and set work schedules
- Resolve customer complaints.

Employment requirements

- A university degree or college diploma in hotel management or other related discipline is usually required for managers employed by hotel chains or large accommodation establishments.
- Several years of experience within the accommodation industry are usually required and may substitute for formal educational requirements.

Classified elsewhere

- *Executive Housekeepers (6213)*
- *Facility Operation and Maintenance Managers (0721)*
- *Restaurant and Food Service Managers (0631)*
- *Retail Trade Managers (0621)*
- *Sales, Marketing and Advertising Managers (0611)*

0641 Commissioned Police Officers

Commissioned police officers plan, organize, direct, control and evaluate police force administration and police activities such as maintaining law and order and detecting and preventing crime. They are employed by municipal, provincial and federal governments. This unit group includes officers from the rank of staff sergeant to police commissioner. Commissioned officers in the railway police are also included in this unit group.

Example titles

chief superintendent	police superintendent
deputy police chief	railway police chief
harbour police chief	RCMP (Royal Canadian Mounted Police)
police chief	commissioner
police lieutenant	staff inspector

Main duties

Commissioned police officers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of a police force or division of a police force
- Develop and implement police force policies and procedures
- Oversee police investigations and ensure that procedures are conducted in accordance with laws and regulations
- Assess performance of subordinates and authorize promotions, transfers and disciplinary actions.

Employment requirements

- Completion of secondary school is required.
- A university degree in the social sciences or in business administration may be required.
- Several years of experience as a police officer are required.

Classified elsewhere

- *By-Law Enforcement and Other Regulatory Officers, n.e.c.* (6463)
- *Police Officers (Except Commissioned)* (6261)
- *Sheriffs and Bailiffs* (6461)

0642 Fire Chiefs and Senior Firefighting Officers

Fire chiefs and senior firefighting officers plan, organize, direct, control and evaluate firefighting operations and fire prevention activities in fire departments. Fire chiefs and senior firefighting officers are employed by municipal and federal governments and by industrial establishments with firefighting services.

Example titles

deputy fire chief
district fire chief

fire chief

Main duties

Fire chiefs and senior firefighting officers perform some or all of the following duties:

- Develop, implement and evaluate policies and procedures for the operation of a municipal fire department, a district fire region or an industrial firefighting service
- Plan, direct and co-ordinate firefighting strategies for fire departments
- Direct the training of personnel in firefighting methods
- Develop and oversee the implementation of fire prevention campaigns
- Represent the fire department in communications with government, the media and the public.

Employment requirements

- Completion of secondary school is required.
- Completion of a provincial or municipal firefighters training course is required.
- A minimum of ten years of experience as a firefighter is usually required before becoming eligible for a senior officer position.

Classified elsewhere

- *Firefighters* (6262)

0643 Commissioned Officers, Armed Forces

This unit group consists of commissioned officers in the armed forces who plan, organize, command and evaluate the activities of personnel in occupations unique to the armed forces such as artillery and infantry units, military intelligence units and air weapons control units. The ranks of commissioned officers included in this unit group range from lieutenant to general.

Example titles

air weapons control officer
armour officer
artillery officer

infantry officer
intelligence officer (management)

Main duties

Commissioned officers in the armed forces perform some or all of the following duties:

- Plan, organize and command the activities of military combat units such as armour, artillery and infantry battalions
- Develop and implement military procedures and policies based on detailed knowledge of units' capabilities and performance
- Direct subordinates in training and co-ordinate and direct activities of units in accordance with military practices
- Assume responsibility for welfare, morale and discipline of units
- Review and evaluate unit performance, prepare reports and provide briefings for superiors
- May command and lead units as part of United Nations' peacekeeping role in foreign countries.

Employment requirements

- A university degree is usually required.
- Completion of military training is required.
- Experience as a non-commissioned member of the armed forces and demonstrated leadership ability may substitute for a university degree.
- Senior ranks, such as colonel, require several years of experience.

Additional information

- Data provided by Statistics Canada for *Commissioned Officers, Armed Forces* (0643) includes all commissioned officers. For further information, see Introduction to the NOC.

Classified elsewhere

- *Occupations Unique to the Armed Forces* (6464) Commissioned officers whose occupations have civilian counterparts are classified with those occupations. For example:
 - Dental officer – military (in 3113 *Dentists*)
 - Military engineering officer – civil (in 2131 *Civil Engineers*)
 - Military lawyer (in 4112 *Lawyers and Quebec Notaries*)
 - Pilot – military (in 2271 *Air Pilots, Flight Engineers and Flying Instructors*)

0651 Other Services Managers

This unit group includes managers of establishments that provide services not elsewhere classified, such as dry cleaning, hairdressing or residential cleaning. This group also includes managers of schools that provide non-vocational instruction in driving, languages, music, dance, art, cooking or fashion.

Example titles

barber shop manager
car wash manager
cooking school manager
driving school manager
dry cleaning service manager

hairdressing salon manager
manager, residential cleaning service
manager, septic tank service
manager, window washing service
pest control service manager

Main duties

Managers in this unit group perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of an establishment providing services such as dry cleaning, hairdressing or residential cleaning, or a school providing non-vocational instruction in driving, languages, music, dance, art, cooking or fashion
- Establish or implement policies and procedures for staff
- Plan and control budget and inventory
- Respond to inquiries or complaints and resolve problems
- Manage contracts for advertising or marketing strategies
- Hire, train and supervise staff.

Employment requirements

- Completion of secondary school is usually required.
- A college diploma or vocational certificate in the subject of instruction may be required.
- One to three years of experience in the service being offered are usually required.

Classified elsewhere

- *Accommodation Service Managers* (0632)
- *Cleaning Supervisors* (6215)
- *Executive Housekeepers* (6213)
- *Other Business Services Managers* (0123)
- *Retail Trade Managers* (0621)
- *Retail Trade Supervisors* (6211)

0711 Construction Managers

Construction managers plan, organize, direct, control and evaluate the activities of a construction company or a construction department within a company, under the direction of a general manager or other senior manager. They are employed by residential, commercial and industrial construction companies and by construction departments of companies outside the construction industry.

Example titles

commercial construction manager
construction manager
construction superintendent
general contractor
housing construction manager

industrial construction manager
pipeline construction manager
project manager, construction
residential construction manager

Main duties

Construction managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate construction projects from start to finish according to schedule, specifications and budget
- Prepare and submit construction project budget estimates
- Plan and prepare construction schedules and milestones and monitor progress against established schedules
- Prepare contracts and negotiate revisions, changes and additions to contractual agreements with architects, consultants, clients, suppliers and subcontractors
- Develop and implement quality control programs
- Represent company on matters such as business services and union contracts negotiation
- Prepare progress reports and issue progress schedules to clients
- Direct the purchase of building materials and land acquisitions
- Hire and supervise the activities of subcontractors and subordinate staff.

• Extensive experience in the construction industry may substitute for post-secondary education requirements.

• Professional engineering status or construction trade certification may be required by some employers.

Additional information

- Progression to senior management positions is possible with experience.

Classified elsewhere

- *Residential Home Builders and Renovators* (0712)
- *Senior Managers – Goods Production, Utilities, Transportation and Construction* (0016)

Employment requirements

- A university degree in civil engineering or a college diploma in construction technology is usually required.
- A master's degree in project management may be required.
- Several years of experience in the construction industry, including experience as a construction supervisor or field superintendent, are usually required.

0712 Residential Home Builders and Renovators

Residential home builders own, operate and manage companies engaged in the construction of new residential homes. Residential home renovators own, operate and manage companies engaged in the renovation of existing residential homes.

Example titles

contractor, home renovation
contractor, residential homes
home builder

home renovator
renovation contractor
residential home builder

Main duties

Residential home builders and renovators perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of a residential home building or renovating company
- Prepare bids for home construction or renovation projects
- Consult with customers, architects and engineers regarding plans and specifications
- Select, employ and supervise trade subcontractors to do specialized work, such as plumbing, heating and electrical work
- Plan and prepare work schedules and co-ordinate the activities of subcontractors
- Inspect work performed by subcontractors to ensure quality and conformity with plans and specifications
- Prepare and maintain a directory of suppliers and trade subcontractors
- Develop and implement marketing and advertising strategies to promote company's products and services
- May perform carpentry or other trade work during home construction or renovation activities.

Classified elsewhere

- Carpentry, electrical and other construction trade contractors (in 721 *Contractors and Supervisors, Trades and Related Workers*)
- *Construction Managers* (0711)
- *Senior Managers – Goods Production, Utilities, Transportation and Construction* (0016)

Employment requirements

- Extensive experience in the home construction industry, including experience as a general supervisor, is usually required for self-employment as a home builder or a home renovator.
- Progression to senior management positions is possible with experience.

0713 Transportation Managers

Transportation managers of operations plan, organize, direct, control and evaluate the operations of transportation companies such as railways, airlines, bus lines, municipal transit systems, shipping lines and trucking companies, under the direction of a general manager or other senior manager. Transportation managers of freight traffic plan, organize, direct, control and evaluate companies or departments responsible for the transportation and movement of goods, under the direction of a general manager or other senior manager. They are employed by transportation, freight forwarding and shipping companies and by transportation departments of companies in retail and manufacturing sectors and utilities.

Example titles

bus company manager
flight operations manager
freight forwarding manager
marine superintendent
railway freight manager

superintendent, rail operations
traffic manager
transportation manager
transport department manager
urban transit system manager

Main duties

Transportation managers, operations perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of a transportation company
- Set operations policies and standards, including determination of safety procedures for the handling of dangerous goods, and ensure compliance with transport regulations
- Oversee dispatch of vehicles, vessels or aircraft
- Control the company or departmental budget, including acquisitions
- Monitor company's or department's performance, prepare reports for senior management, and plan for changes to schedules and policies
- Recruit personnel and oversee their training.

Transportation managers, freight traffic perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the activities of companies or departments responsible for co-ordinating, arranging and monitoring the transportation and movement of goods
- Arrange for shipping documentation and oversee the scheduling and dispatching of goods and the tracking and tracing of goods in transit
- Set performance goals, oversee the setting of transportation service rates and monitor revenue
- Develop plans and procedures for the transportation and storage of goods
- Negotiate with carriers, warehouse operators and insurance company representatives for services and preferential rates

- Control the departmental budget
- Recruit personnel and oversee their training.

Employment requirements

Transportation managers, operations

- A bachelor's degree in business administration or engineering is usually required.
- Several years of experience in transportation operations are usually required, including supervisory experience.
- Extensive experience as a supervisor and operator in a particular transport mode, such as a pilot, train engineer, vessel master or truck driver, may substitute for formal education.
- Certification as an operator of a particular mode of transportation, such as commercial pilot, vessel master or truck driver, is usually required.

Transportation managers, freight traffic

- Completion of secondary school is required.
- A college diploma or university degree in business or transportation administration may be required.
- Several years of clerical, operational or administrative experience related to freight traffic are required.

Additional information

- There is little or no mobility between transportation managers, operations and transportation managers, freight traffic.
- There is little or no mobility between transportation managers of land, sea and air transportation operations.

0713 Transportation Managers

Classified elsewhere

- Airport managers, harbour masters and other managers of transportation facilities (in 0721 *Facility Operation and Maintenance Managers*)
- Senior transportation managers (in 0016 *Senior Managers – Goods Production, Utilities, Transportation and Construction*)

0721 Facility Operation and Maintenance Managers

Facility operation managers plan, organize, direct, control and evaluate the operations of commercial, transportation and recreational facilities and the included real estate. Facility operation managers are employed by a wide range of establishments, such as airports, harbours, canals, shopping centres, convention centres, warehouses and recreational facilities. Maintenance managers plan, organize, direct, control and evaluate the maintenance department within commercial, industrial, institutional, recreational and other facilities. Maintenance managers are employed by a wide range of establishments, such as office buildings, shopping centres, airports, harbours, warehouses, grain terminals, universities, schools and sports facilities, and by the maintenance and mechanical engineering departments of manufacturing and other industrial establishments.

Example titles

airport manager
arena manager
campus maintenance manager
chief, maintenance support services
facility operations manager
harbour master
head, facilities maintenance
maintenance manager

mechanical services superintendent
plant maintenance superintendent
recreation facility manager
shopping centre manager
shopping mall manager
superintendent, maintenance and service
warehouse manager

Main duties

Facility operation managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of commercial, transportation and recreational facilities and the included real estate
- Oversee the leasing of space in the facility and the included real estate and the development of marketing strategies
- Plan, organize and direct administrative services such as signage, cleaning, maintenance, parking, safety inspections, security and snow removal
- Plan, organize, direct, control and evaluate construction projects to modify commercial, transportation and recreational facilities and real estate
- Oversee the installation, maintenance and repair of real estate infrastructures including machinery, equipment and electrical and mechanical systems
- Plan and manage the facility's operations budget
- Prepare or oversee the preparation of reports and statistics related to areas of responsibility
- Hire, train and supervise staff.

Maintenance managers perform some or all of the following duties:

- Direct the maintenance and repair of an establishment's machinery, equipment and electrical and mechanical systems

- Develop and implement schedules and procedures for safety inspections and preventive maintenance programs
- Co-ordinate cleaning, snow removal and landscaping operations
- Administer contracts for the provision of supplies and services
- Plan and manage a facility's maintenance budget
- Hire, train and supervise staff.

Employment requirements

- Facility operation managers require completion of a college or university program in business administration or in a discipline related to facility operation and maintenance
 - or
 - An equivalent combination of technical training and experience in administration or maintenance.
- Maintenance managers require completion of a college or university program in electrical or mechanical engineering or in another discipline related to building maintenance
 - or
 - An equivalent combination of technical training and experience in building maintenance.
- Several years of supervisory experience in facility operations or maintenance are usually required.

0721 Facility Operation and Maintenance Managers

Classified elsewhere

- *Administrative Services Managers* (011)
- Building superintendents (in 6663 *Janitors, Caretakers and Building Superintendents*)
- Manager, grain elevator (in 6234 *Grain Elevator Operators*)
- Production operations managers (in 0911 *Manufacturing Managers*)

0811 Primary Production Managers (Except Agriculture)

This unit group includes managers who plan, organize, direct, control and evaluate the operations of establishments in the following primary industries: forestry and logging, mining and quarrying, oil and gas drilling, production and servicing operations, and commercial fishing.

Example titles

director of mining
manager, drilling operations
manager, fishing operations
manager, forestry operations
manager, gas field operations

manager, oil well servicing
mine manager
quarry manager
shore captain – fishing

Main duties

Primary production managers in this unit group perform some or all of the following duties:

- Oversee and analyze operations in forestry, logging, mining, quarrying, or oil and gas operations or in services to logging, mining and oil and gas industries, or in commercial fishing
- Recommend operational changes to senior management when necessary to ensure that production quotas and procedures are met
- Prepare production reports for review by senior management
- Confer with other managers to set production quotas, to plan extraction sites and to develop policies for the removal of raw materials
- Evaluate efficiency of production sites to determine adequacy of personnel, equipment and technologies used, and make changes to work schedule or equipment when necessary
- Ensure adherence to safety regulations
- Hire personnel and oversee training needs of staff
- May direct peripheral activities such as the construction of access roads or temporary living quarters.

- Several years of experience in a supervisory occupation in the particular industry are usually required and may substitute for formal education requirements.

Additional information

- Progression to senior management positions in the respective industries is possible with experience.

Classified elsewhere

- Directors of research in primary industry (in 0212 *Architecture and Science Managers*)
- *Farmers and Farm Managers* (8251)
- *Fishing Masters and Officers* (8261)
- *Senior Managers – Goods Production, Utilities, Transportation and Construction* (0016)
- *Supervisors, Logging and Forestry* (8211)
- *Supervisors, Mining and Quarrying* (8221)
- *Supervisors, Oil and Gas Drilling and Service* (8222)

Employment requirements

- Forestry managers usually require a bachelor's degree in forestry science or forest engineering.
- Mining and quarrying managers usually require a bachelor's degree in mining engineering or earth sciences.
- Oil and gas managers usually require a bachelor's degree in geology, earth sciences or petroleum engineering.

0911 Manufacturing Managers

Manufacturing managers plan, organize, direct, control and evaluate the operations of a manufacturing establishment or of a production department within a manufacturing establishment, under the direction of a general manager or other senior manager. They are employed by manufacturing companies.

Example titles

automobile production manager
clothing factory manager
dairy plant manager
distillery manager
factory superintendent
foundry manager
manufacturing manager

operations manager, manufacturing
plant manager, manufacturing
printing plant manager
production manager – manufacturing
textile mill manager
tire plant manager

Main duties

Manufacturing managers perform some or all of the following duties:

- Plan, organize, direct, control and evaluate the operations of a manufacturing establishment or the operations or production department of a manufacturing establishment
- Develop and implement plans to efficiently use materials, labour and equipment to meet production targets
- Plan and manage the establishment of departmental budget
- Develop production schedules and maintain an inventory of raw materials and finished products
- Plan and implement changes to machinery and equipment, production systems and methods of work
- Direct quality control inspection system and develop production reporting procedures
- Develop equipment maintenance schedules and recommend the replacement of machines
- Hire, supervise and train or oversee training of employees in the use of new equipment or production techniques.

Employment requirements

- Completion of a college or university program in engineering or business administration is usually required.
- Five to ten years of supervisory experience in manufacturing are required.

Additional information

- Progression to senior management positions is possible with experience.

Classified elsewhere

- *Facility Operation and Maintenance Managers* (0721)
- *Senior Managers – Goods Production, Utilities, Transportation and Construction* (0016)
- *Transportation Managers* (0713)
- *Utilities Managers* (0912)

0912 Utilities Managers

This unit group includes managers who plan, organize, direct, control and evaluate the operations of utility companies or services or of heating oil distribution companies. The services provided include the distribution of water, electricity, natural gas and heating oil to residential, commercial and industrial consumers, waste disposal and waste recycling. Utilities managers are employed in public and private sector utilities and in heating oil distribution companies.

Example titles

director, distribution systems – utilities
director, electrical power transmission operations
director of waste management
director of water pollution control
director, water supply
electric power plant manager

liquid waste facility manager
manager, distribution, refined petroleum products
manager, electric generating plant
manager, gas supply operations
manager, sewage treatment plant
water filtration plant manager

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Water supply managers manage water filtration, purification processes and pumping operations, schedule and oversee the maintenance of plant equipment and prepare reports on water supply and water quality.
- Electrical power distribution managers manage the operations of electrical power distribution systems including generating stations, transmission stations and distribution networks. They may also plan and direct the distribution activities of a municipal electrical power establishment.
- Natural gas supply managers manage the delivery of gas to consumers, monitor supply inventories and control the recording of injections and withdrawals.
- Petroleum product distribution managers plan and direct the distribution of heating oil products to retail distributors and regional storage sites.
- Water pollution control managers manage the operations of a sewage treatment plant, schedule and direct maintenance of plant equipment, and prepare reports on water quality.
- Waste systems managers manage solid or liquid waste collection and disposal systems, train drivers in how to handle waste and ensure safe operation of disposal facilities.

Employment requirements

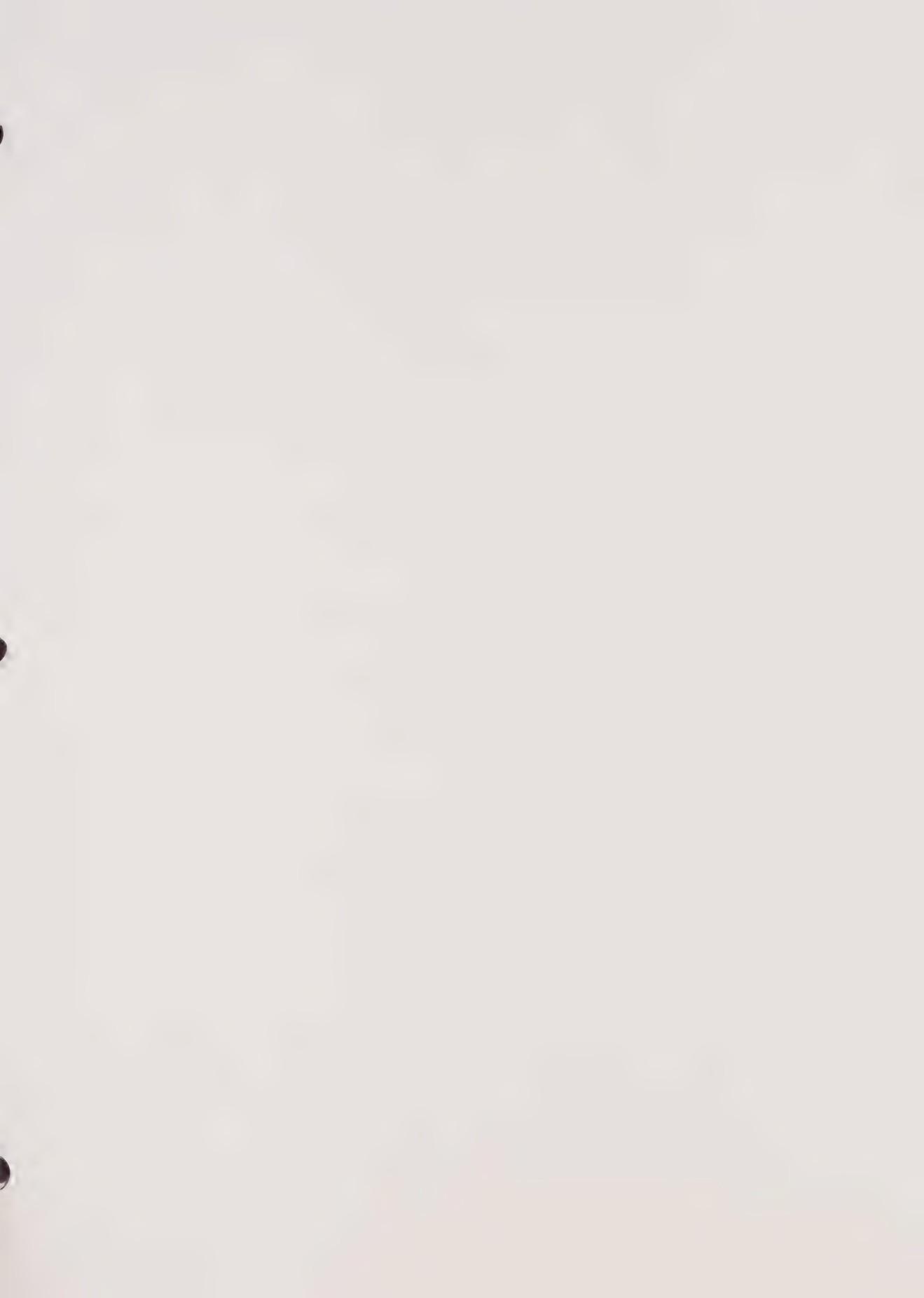
- A bachelor's degree or college diploma in an appropriate discipline is required. For example, electrical engineering is required for managers of transmission lines, and water resource technology for water supply managers.
- Several years of experience as a supervisor in a related utilities operations department are required.
- Professional engineer certification is usually required for managers of utility operations involved in the transmission and distribution of electrical power, and natural gas and heating oil.

Additional information

- Progression to senior management positions in the utility industry is possible with experience.

Classified elsewhere

- *Facility Operation and Maintenance Managers* (0721)
- *Senior Managers – Goods Production, Utilities, Transportation and Construction* (0016)



BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS

Major Group 11

PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE

111 Auditors, Accountants and Investment Professionals

- 1111 Financial Auditors and Accountants
- 1112 Financial and Investment Analysts
- 1113 Securities Agents, Investment Dealers and Brokers
- 1114 Other Financial Officers

112 Human Resources and Business Service Professionals

- 1121 Specialists in Human Resources
- 1122 Professional Occupations in Business Services to Management

Major Group 12

SKILLED ADMINISTRATIVE AND BUSINESS OCCUPATIONS

121 Clerical Supervisors

- 1211 Supervisors, General Office and Administrative Support Clerks
- 1212 Supervisors, Finance and Insurance Clerks
- 1213 Supervisors, Library, Correspondence and Related Information Clerks
- 1214 Supervisors, Mail and Message Distribution Occupations
- 1215 Supervisors, Recording, Distributing and Scheduling Occupations

122 Administrative and Regulatory Occupations

- 1221 Administrative Officers
- 1222 Executive Assistants
- 1223 Personnel and Recruitment Officers
- 1224 Property Administrators
- 1225 Purchasing Agents and Officers
- 1226 Conference and Event Planners
- 1227 Court Officers and Justices of the Peace
- 1228 Immigration, Employment Insurance and Revenue Officers

123 Finance and Insurance Administrative Occupations

- 1231 Bookkeepers
- 1232 Loan Officers
- 1233 Insurance Adjusters and Claims Examiners
- 1234 Insurance Underwriters
- 1235 Assessors, Valuators and Appraisers
- 1236 Customs, Ship and Other Brokers

124 Secretaries, Recorders and Transcriptionists

- 1241 Secretaries (Except Legal and Medical)
- 1242 Legal Secretaries
- 1243 Medical Secretaries
- 1244 Court Recorders and Medical Transcriptionists

Major Group 14

CLERICAL OCCUPATIONS**141 Clerical Occupations, General Office Skills**

- 1411 General Office Clerks
- 1413 Records Management and Filing Clerks
- 1414 Receptionists and Switchboard Operators

142 Office Equipment Operators

- 1422 Data Entry Clerks
- 1423 Desktop Publishing Operators and Related Occupations
- 1424 Telephone Operators

143 Finance and Insurance Clerks

- 1431 Accounting and Related Clerks
- 1432 Payroll Clerks
- 1433 Customer Service Representatives - Financial Services
- 1434 Banking, Insurance and Other Financial Clerks
- 1435 Collectors

144 Administrative Support Clerks

- 1441 Administrative Clerks
- 1442 Personnel Clerks
- 1443 Court Clerks

145 Library, Correspondence and Related Information Clerks

- 1451 Library Clerks
- 1452 Correspondence, Publication and Related Clerks
- 1453 Customer Service, Information and Related Clerks
- 1454 Survey Interviewers and Statistical Clerks

146 Mail and Message Distribution Occupations

- 1461 Mail, Postal and Related Clerks
- 1462 Letter Carriers
- 1463 Couriers, Messengers and Door-to-Door Distributors

147 Recording, Scheduling and Distributing Occupations

- 1471 Shippers and Receivers
- 1472 Storekeepers and Parts Clerks
- 1473 Production Clerks
- 1474 Purchasing and Inventory Clerks
- 1475 Dispatchers and Radio Operators
- 1476 Transportation Route and Crew Schedulers

1111 Financial Auditors and Accountants

Financial auditors examine and analyze the accounting and financial records of individuals and establishments to ensure accuracy and compliance with established accounting standards and procedures. Accountants plan, organize and administer accounting systems for individuals and establishments. Articling students in accounting firms are included in this unit group. Financial auditors and accountants are employed by auditing and accounting firms throughout the private and public sectors, or they may be self-employed.

Example titles

accountant

certified general accountant (CGA)

certified management accountant (CMA)

chartered accountant (CA)

chief accountant

financial auditor

income tax expert

industrial accountant

internal auditor

Main duties

Financial auditors perform some or all of the following duties:

- Examine and analyze journal and ledger entries, bank statements, inventories, expenditures, tax returns and other accounting and financial records, documents and systems of an individual, department, company or other establishment to ensure financial recording accuracy and compliance with established accounting standards, procedures and internal controls
- Prepare detailed reports on audit findings and make recommendations to improve individual or establishment's accounting and management practices
- Conduct field audits of businesses to ensure compliance with provisions of the Income Tax Act, Canadian Business Corporations Act or other statutory requirements
- May supervise other auditors or professionals in charge of accounting within client's establishment.

Accountants perform some or all of the following duties:

- Plan, set up and administer accounting systems and prepare financial information for an individual, department, company or other establishment
- Examine accounting records and prepare financial statements and reports
- Develop and maintain cost finding, reporting and internal control procedures
- Examine financial accounts and records and prepare income tax returns from accounting records

- Analyze financial statements and reports and provide financial, business and tax advice
- May act as a trustee in bankruptcy proceedings
- May supervise and train articling students, other accountants or administrative technicians.

Employment requirements

- Chartered accountants require a university degree
and
Completion of a professional training program approved by a provincial institute of chartered accountants and, depending on the province, either two years or 30 months of on-the-job training
and

Membership in a provincial Institute of Chartered Accountants upon successful completion of the Uniform Evaluation (UFE).

- Certified general accountants and certified management accountants require a university degree
and
Completion of a training program approved by the Society of Certified General Accountants or Society of Management Accountants and several years of on-the-job training
and

Certification by the Certified General Accountants Association or the Society of Management Accountants.

- Auditors require education, training and recognition as indicated for chartered accountants, certified general accountants or certified management accountants
and
Some experience as an accountant.

1111 Financial Auditors and Accountants

- Auditors may require recognition by the Institute of Internal Auditors.
- To act as a trustee in bankruptcy proceedings, auditors and accountants must hold a licence as a trustee in bankruptcy.
- Licensing by the provincial or territorial governing body is usually required for accountants and auditors practising public accounting.

Additional information

- There is limited mobility among the three professional accounting designations (CA, CGA and CMA).
- Progression to auditing or accounting management positions is possible with experience.

Classified elsewhere

- *Bookkeepers* (1231)
- *Financial Managers* (0111)
- Program or other non-financial auditors (in 416 *Policy and Program Officers, Researchers and Consultants*)

1112 Financial and Investment Analysts

Financial and investment analysts collect and analyze financial information such as economic forecasts, trading volumes and the movement of capital, financial backgrounds of companies, historical performances and future trends of stocks, bonds and other investment instruments to provide financial and investment or financing advice for their company or their company's clients. Their studies and evaluations cover areas such as takeover bids, private placements, mergers or acquisitions. Financial analysts are employed by a wide range of establishments throughout the private and public sector, such as banks, brokerage houses, insurance companies, investment companies, manufacturing firms, trust companies, utility companies and underwriting firms. Investment analysts are employed primarily by brokerage houses and trust companies.

Example titles

chartered financial analyst

financial analyst

investment analyst

money market analyst

portfolio manager

research associate, financial services

Main duties

Financial analysts perform some or all of the following duties:

- Evaluate financial risk, prepare financial forecasts, financing scenarios and other documents concerning capital management, and write reports and recommendations
- Plan short- and long-term cash flows and assess financial performance
- Analyze investment projects
- Advise on and participate in the financial aspects of contracts and calls for tender
- Follow up on financing projects with financial backers
- Develop, implement and use tools for managing and analyzing financial portfolio
- Prepare a regular risk profile for debt portfolios
- Assist in preparing operating and investment budgets.

Investment analysts perform some or all of the following duties:

- Collect financial and investment information about companies, stocks, bonds and other investments using daily stock and bond reports, economic forecasts, trading volumes, financial periodicals, securities manuals, company financial statements and other financial reports and publications
- Examine and analyze financial and investment information collected, including profiles of companies, stock and bond prices, yields and future trends and other investment information
- Provide investment advice and recommendations to clients, senior company officials, pension fund managers, securities agents and associates

- Prepare company, industry and economic outlooks, analytical reports, briefing notes and correspondence.

Employment requirements

- A bachelor's degree in commerce, business administration or economics
and
On-the-job training and industry courses and programs are usually required.
- A master's degree in business administration (MBA) (concentration in finance) or in finance may be required.
- The Chartered Financial Analyst (CFA) designation, available through a program conducted by the Institute of Chartered Financial Analysts in the United States, may be required by some employers.

Additional information

- Progression to management positions, such as securities manager, is possible with experience.

Classified elsewhere

- Economic development officers (in 4163 *Business Development Officers and Marketing Researchers and Consultants*)
- Economists (in 4162 *Economists and Economic Policy Researchers and Analysts*)
- Financial planners (in 1114 *Other Financial Officers*)
- *Securities Agents, Investment Dealers and Brokers* (1113)

1113 Securities Agents, Investment Dealers and Brokers

Securities agents and investment dealers buy and sell stocks, bonds, treasury bills, mutual funds and other securities for individual investors, pension fund managers, banks, trust companies, insurance firms and other establishments. Brokers buy and sell stocks, bonds, commodity futures, foreign currencies and other securities at stock exchanges on behalf of investment dealers. They are employed by investment companies, stock brokerage firms, stock and commodity exchanges and other establishments in the securities industry.

Example titles

agent, securities	mutual fund broker
bond dealer	mutual fund sales representative
broker	registered investment representative
commodity broker	securities sales agent
discount broker	securities trader
floor trader – commodity exchange	stockbroker
foreign exchange trader	supervisor, registered representatives
investment dealer	

Main duties

Securities agents and investment dealers perform some or all of the following duties:

- Develop long-term relationships with their clients by preparing investment strategies to help them achieve their financial goals, offering advice and information on various investments to guide them in managing their portfolios
- Review financial periodicals, stock and bond reports, business publications and other material, and develop a network within the financial industry to gather relevant information and identify potential investments for clients
- Carry out investment orders by buying and selling stocks, bonds, treasury bills, mutual funds and other securities for individual investors, pension fund managers or companies such as banks, trust companies and insurance firms
- Monitor clients' investment portfolios and ensure that investment transactions are carried out according to industry regulations.

Brokers perform some or all of the following duties:

- Buy and sell stocks, bonds, commodity futures, foreign currencies and other securities at stock exchanges on behalf of investment dealers
- Develop trading strategies by reviewing investment information and monitoring market conditions from the exchange floor and through contact with trading departments of other investment firms, pension fund managers and financial analysts

- Make bids and offers to buy and sell securities and complete details of sales on exchange trade tickets
- Prepare reviews of portfolios' positions.

Employment requirements

- A bachelor's or master's degree in economics, business or other discipline is usually required.
- Securities sales representatives and brokers require completion of industry investment and sales training programs and completion of the Canadian Securities course and the Registered Representative Manual Exam offered by the Canadian Securities Institute.
- Specialized courses are also available for securities sales representatives and brokers who want to trade in specific investment products such as securities options and futures contracts.
- Licensure by the provincial securities commission in the province of employment is required for securities agents, investment dealers and brokers.

Additional information

- Progression to related management positions is possible with experience.

Classified elsewhere

- *Financial and Investment Analysts* (1112)
- Financial brokerage managers (in 0121 *Insurance, Real Estate and Financial Brokerage Managers*)
- *Other Financial Officers* (1114)

1114 Other Financial Officers

This unit group includes professional occupations in finance not elsewhere classified such as financial planners, financial examiners and inspectors, financial investigators, financial underwriters, mortgage brokers and trust officers. They are employed by banks, trust companies, investment firms and governments, or they may be self-employed.

Example titles

credit unions examiner
estate and trust administrator
financial investigator
financial planner

financial underwriter
inspector, financial institutions
mortgage broker
trust officer

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Financial planners develop personal financial plans for clients covering cash management, finances, insurance coverage, investments, retirement and estate planning, taxes and legal matters; analyze clients' financial records, set goals and develop a financial strategy; advise clients on implementing the financial plan to help them achieve their goals; may also arrange for the sale of financial products and investments depending on the licence held, and monitor the portfolio to ensure its quality and profitability; and help to expand business and attract new clients.
- Financial examiners and inspectors review and examine banks, trust companies, credit unions, caisses populaires, credit companies, real estate companies, insurance companies, pension funds, securities brokers and other financial services and institutions to ensure compliance with governing legislation and regulations.
- Financial investigators investigate possible unethical conduct or breaches of securities or commodity futures laws by persons or companies that trade in securities and commodity futures or that provide related financial services.
- Financial underwriters underwrite new issues of stocks and bonds, negotiate with corporations and governments to determine the type and terms of new securities issued and prepare offering prospectuses.
- Trust officers administer estate, personal, charitable, corporate and other types of trusts, direct trust account investments, receive and record investment income and disburse trust funds.

- Mortgage brokers meet with clients to obtain information about income, liabilities and assets, and type, price and condition of property to be mortgaged, and negotiate mortgage loans with lenders or lending institutions on behalf of clients.

Employment requirements

- A bachelor's degree in business administration, commerce, economics or a related field is usually required.
- Various training programs and courses are offered by financial institutes and organizations, such as the Canadian Securities Institute, Institute of Canadian Bankers, Institute of Chartered Financial Analysts, Investment Funds Institute, Canadian Institute of Financial Planning, and Trust Companies Institute of Canada, and may be required by employers.
- The designation Personal Financial Planner, awarded by the Financial Planners Standards Council of Canada, may be required.
- Financial planners who sell regulated financial products and investments, such as annuities, RRSPs and life insurance, are required to be licensed by the appropriate governing body.
- Financial examiners and inspectors may require a recognized accounting designation.
- Mortgage brokers require a real estate licence in Quebec and a mortgage broker licence in Newfoundland and Labrador, Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.

Additional information

- Progression to financial management positions is possible with experience.

1114 Other Financial Officers

- While these kinds of positions require a high degree of training and qualifications, persons who occupy them must continually update their skills and pursue professional development.

Classified elsewhere

- Economic development officers (in 4163 *Business Development Officers and Marketing Researchers and Consultants*)
- Economists (in 4162 *Economists and Economic Policy Researchers and Analysts*)
- *Financial and Investment Analysts* (1112)
- *Managers in Financial and Business Services* (012)
- *Securities Agents, Investment Dealers and Brokers* (1113)

1121 Specialists in Human Resources

Specialists in human resources develop, implement and evaluate human resources and labour relations policies, programs and procedures and advise managers and employers on personnel matters. Specialists in human resources are employed throughout the private and public sectors, or they may be self-employed.

Example titles

business agent, labour organization
classification officer – human resources
classification specialist
compensation research analyst
conciliator
consultant, human resources
employee relations officer

employment equity officer
human resources research officer
job analyst
labour relations officer
mediator
union representative
wage analyst

Main duties

Specialists in human resources perform some or all of the following duties:

- Plan, develop, implement and evaluate personnel and labour relations strategies including policies, programs and procedures to address an organization's human resource requirements
- Advise managers and employees on the interpretation of personnel policies, compensation and benefit programs and collective agreements
- Negotiate collective agreements on behalf of employers or workers, mediate labour disputes and grievances and provide advice on employee and labour relations
- Research and prepare occupational classifications, job descriptions, salary scales and competency appraisal measures and systems
- Plan and administer staffing, total compensation, training and career development, employee assistance, employment equity and affirmative action programs
- Manage programs and maintain human resources information and related records systems
- Hire and oversee training of staff
- Co-ordinate employee performance and appraisal programs
- Research employee benefit and health and safety practices and recommend changes or modifications to existing policies.

Employment requirements

- A university degree or college diploma in a field related to personnel management, such as business administration, industrial relations, commerce or psychology
or
Completion of a professional development program in personnel administration is required.
- Some experience in a clerical or administrative position related to personnel administration may be required.

Additional information

- Progression to management positions is possible with experience.

Classified elsewhere

- *Human Resources Managers* (0112)
- *Personnel and Recruitment Officers* (1223)
- *Personnel Clerks* (1442)
- *Professional Occupations in Business Services to Management* (1122)
- Training officers and instructors (in 4131 *College and Other Vocational Instructors*)

1122 Professional Occupations in Business Services to Management

This unit group includes those who provide services to management such as analyzing the operations, managerial methods or functions of an organization in order to propose, plan and implement improvements, or analyzing advertising needs and developing appropriate advertising plans. They are employed by management consulting firms, advertising agencies and throughout the public and private sectors or are self-employed.

Example titles

advertising account executive
business management consultant
business methods analyst
consultant, organizational analysis
ISO consultant
management analyst

organizational analyst
promotion specialist
records management specialist
researcher, organization and methods
senior consultant, operations management

Main duties

Management consultants perform some or all of the following duties:

- Analyze and provide advice on the managerial methods and organization of a public or private sector establishment
- Conduct research to determine efficiency and effectiveness of managerial policies and programs
- Conduct assessments and propose improvements to methods, systems and procedures in areas such as operations, human resources, records management and communications
- Conduct quality audits and develop quality management and quality assurance standards for ISO (International Organization for Standardization) registration
- Plan the reorganization of the operations of an establishment
- May supervise contracted researchers or clerical staff.

Advertising and promotion consultants perform some or all of the following duties:

- Assess characteristics of products or services to be promoted and advise on the advertising needs of an establishment
- Advise clients on advertising or sales promotion strategies
- Develop and implement advertising campaigns appropriate for print or electronic media.

- A graduate degree in business administration may be required.
- Some establishments may require management consultants to be certified by a provincial management consulting association.
- Certification as a quality auditor may be required for some occupations in this unit group.
- Occupations in health information management may require certification by the Canadian Health Information Management Association (CHIMA).
- In Quebec, occupations in health information management may require certification by the Association québécoise des archivistes médicales.

Additional information

- Progression to senior and managerial positions is possible with experience.

Classified elsewhere

- *Business Development Officers and Marketing Researchers and Consultants* (4163)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Financial and Investment Analysts* (1112)
- *Financial Auditors and Accountants* (1111)
- *Industrial and Manufacturing Engineers* (2141)
- *Other Financial Officers* (1114)

Employment requirements

- A bachelor's degree or college diploma in business administration, commerce or a related discipline is usually required.

1211 Supervisors, General Office and Administrative Support Clerks

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following minor groups: *Clerical Occupations*, *General Office Skills* (141), *Office Equipment Operators* (142) and *Administrative Support Clerks* (144). They are employed throughout the public and private sectors.

Example titles

clerical supervisor

data entry supervisor

filings clerks supervisor

hospital admitting clerks supervisor

medical records unit supervisor

personnel clerks supervisor

records office supervisor

registry supervisor

supervisor, switchboard operators

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Co-ordinate, assign and review the work of clerks engaged in the following duties: word processing; record keeping and filing; operating telephones and switchboards; data entry; desktop publishing; and other activities involving general office and administrative skills
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems and prepare and submit progress and other reports
- Train workers in job duties, safety procedures and company policies
- Requisition supplies and materials
- Ensure smooth operation of office equipment and machinery, and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

Classified elsewhere

- Office managers (in 1221 *Administrative Officers*)
- *Supervisors, Finance and Insurance Clerks* (1212)
- *Supervisors, Library, Correspondence and Related Information Clerks* (1213)
- *Supervisors, Mail and Message Distribution Occupations* (1214)
- *Supervisors, Recording, Distributing and Scheduling Occupations* (1215)

Employment requirements

- Completion of secondary school is required.
- Completion of college courses related to area supervised is usually required.
- Experience in the occupation supervised is usually required.

1212 Supervisors, Finance and Insurance Clerks

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Accounting and Related Clerks* (1431), *Payroll Clerks* (1432), *Customer Service Representatives – Financial Services* (1433), *Banking, Insurance and Other Financial Clerks* (1434) and *Collectors* (1435). They are employed by banks and other financial institutions, insurance companies, and by other establishments throughout the private and public sectors.

Example titles

accounts payable supervisor	credit supervisor
accounts receivable supervisor	payroll supervisor
bank clerks supervisor	savings supervisor
billing supervisor	supervisor, claims adjusters
bookkeeping supervisor	supervisor, customer service representatives
collection supervisor	supervisor of accounting

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Implement efficient working processes and co-ordinate, assign and review the work of clerks engaged in the following duties: administering accounts payable and receivable; processing, verifying and recording financial documents and forms; administering payrolls; serving customers in banks, trust companies and other financial institutions; processing, verifying and recording insurance claims and forms; and collecting user fees and payments on overdue accounts
- Examine and verify accuracy of work and authorize routine payments, credits, deposits and withdrawals
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems and prepare and submit progress and other reports
- Identify training needs and train workers in job duties and company policies
- Requisition supplies and materials
- Ensure smooth operation of computer systems and equipment and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

- Experience in the clerical occupation supervised is required.

Classified elsewhere

- *Financial Managers* (0111)
- *Other Financial Officers* (1114)

Employment requirements

- Completion of a college program or courses in bookkeeping, accounting or a related subject is required.

1213 Supervisors, Library, Correspondence and Related Information Clerks

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Library Clerks* (1451), *Correspondence, Publication and Related Clerks* (1452), *Customer Service, Information and Related Clerks* (1453) and *Survey Interviewers and Statistical Clerks* (1454). They are employed throughout the private and public sectors.

Example titles

advertising clerks supervisor	library clerks supervisor
correspondence clerks supervisor	publication clerks supervisor
customer service supervisor (except financial services)	statistical clerks supervisor
information clerks supervisor	supervisor, call centre agents supervisor, survey interviewers

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Co-ordinate, assign and review the work of clerks engaged in the following duties: conducting surveys and interviews; collecting and compiling statistics; providing information and customer service; reshelving books and performing other tasks in libraries; writing correspondence including e-mails and preparing material for translation and publication
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems, monitor services provided by clerks and agents, and prepare and submit progress and other reports
- Train workers in job duties and company policies
- Requisition supplies and materials
- Ensure smooth operation of computer systems and equipment and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

Employment requirements

- Completion of secondary school is required.
- Completion of college courses related to area supervised may be required.
- Experience in the clerical occupation supervised is usually required.

Classified elsewhere

- *Librarians* (5111)
- *Library and Archive Technicians and Assistants* (5211)
- *Supervisors, Mail and Message Distribution Occupations* (1214)

1214 Supervisors, Mail and Message Distribution Occupations

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Mail, Postal and Related Clerks* (1461), *Letter Carriers* (1462) and *Couriers, Messengers and Door-to-Door Distributors* (1463). They are employed by Canada Post Corporation, courier companies, governments and large corporations.

Example titles

courier service supervisor

messenger service supervisor

letter carriers supervisor

postal station supervisor

mail and postal clerks supervisor

postmaster/mistress

mail room supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Co-ordinate, assign and review the work of postal clerks, letter carriers and couriers engaged in the collecting, sorting and delivering of mail, parcels and other material
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems and prepare and submit progress and other reports
- Train workers in job duties, safety procedures and company policies
- Requisition supplies and materials
- Ensure smooth operation of computer systems and equipment and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

Classified elsewhere

- *Postal and Courier Services Managers* (0132)
- Shipping and receiving supervisors (in 1215 *Supervisors, Recording, Distributing and Scheduling Occupations*)

Employment requirements

- Completion of secondary school is required.
- Several years of experience in the occupation supervised are usually required.

1215 Supervisors, Recording, Distributing and Scheduling Occupations

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Shippers and Receivers* (1471), *Storekeepers and Parts Clerks* (1472), *Production Clerks* (1473), *Purchasing and Inventory Clerks* (1474), *Dispatchers and Radio Operators* (1475) and *Transportation Route and Crew Schedulers* (1476). They are employed throughout the private and public sectors.

Example titles

dispatch logistician	parts service supervisor
flight crew scheduling supervisor	production clerks supervisor
freight forwarding logistician	ramp services supervisor – airport
head dispatcher	stock control supervisor
head shipper	supervisor, receiving
inventory control supervisor	supply control co-ordinator
logistics supervisor – transportation	

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Co-ordinate, assign and review the work of clerks engaged in the following duties: shipping, receiving, storing, distributing and maintaining inventories of materials, parts and products; processing purchasing transactions; co-ordinating production work; dispatching crews; scheduling transportation crews and routes; operating airport ramp servicing vehicles; and other related activities
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems and prepare and submit progress and other reports
- Train workers in job duties, safety procedures and company policies
- Requisition supplies and materials
- Ensure smooth operation of computer systems, equipment and machinery and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience in the occupation supervised are usually required.

Classified elsewhere

- *Supervisors, Mail and Message Distribution Occupations* (1214)

1221 Administrative Officers

Administrative officers oversee and implement administrative procedures, establish work priorities and coordinate the acquisition of administrative services such as office space, supplies and security services. They are employed throughout the private and public sectors.

Example titles

access to information and privacy officer	office manager
administrative officer	planning officer
administrative services co-ordinator	records analyst – access to information
co-ordinator, office services	requirements officer – military
forms management officer	surplus assets officer
liaison officer	university admissions officer
office administrator	

Main duties

Administrative officers perform some or all of the following duties:

- Oversee and co-ordinate office administrative procedures and review, evaluate and implement new procedures
- Establish work priorities, delegate work to office support staff, and ensure deadlines are met and procedures are followed
- Carry out administrative activities associated with admissions to post-secondary educational institutions
- Administer policies and procedures related to the release of records in processing requests under government access to information and privacy legislation
- Co-ordinate and plan for office services, such as accommodation, relocations, equipment, supplies, forms, disposal of assets, parking, maintenance and security services
- Assist in preparation of operating budget and maintain inventory and budgetary controls
- Assemble data and prepare periodic and special reports, manuals and correspondence.

Employment requirements

- Completion of secondary school is required.
- A university degree or college diploma in business or public administration may be required.
- Experience in a senior clerical or executive secretarial position related to office administration is usually required.

Additional information

- Progression to administrative service management positions is possible with experience.

Classified elsewhere

- *Administrative Clerks* (1441)
- *Administrative services managers* (in 0114 *Other Administrative Services Managers*)
- *Conference and Event Planners* (1226)
- *Executive Assistants* (1222)
- *Property Administrators* (1224)

1222 Executive Assistants

Executive assistants co-ordinate administrative procedures, public relations activities and research and analysis functions for members of legislative assemblies, ministers, deputy ministers, corporate officials and executives, committees and boards of directors. They are employed by governments, corporations and associations.

Example titles

committee clerk
corporate secretary

executive assistant
legislative assistant

Main duties

Executive assistants perform some or all of the following duties:

- Establish and co-ordinate administrative policies and procedures for officials, committees and boards of directors
- Analyze incoming and outgoing memoranda, submissions and reports and prepare and co-ordinate the preparation and submission of summary briefs and reports to executives, committees and boards of directors
- Prepare agendas and make arrangements for committee, board and other meetings
- Conduct research, compile data, and prepare papers for consideration and presentation by executives, committees and boards of directors
- Meet with individuals, special interest groups and others on behalf of executives, committees and boards of directors to discuss issues and assess and recommend various courses of action
- Liaise with departmental and corporate officials and with other organizations and associations on behalf of executives, committees and boards of directors.

Employment requirements

- Completion of secondary school is required.
- A bachelor's degree in public administration, political science or a related discipline is usually required.
- Experience in a related administrative occupation is usually required.

Classified elsewhere

- *Administrative Officers* (1221)
- *Conference and Event Planners* (1226)
- Executive secretaries (in 1241 *Secretaries (Except Legal and Medical)*)

1223 Personnel and Recruitment Officers

Personnel and recruitment officers identify and advertise job vacancies, recruit candidates, and assist in the selection and reassignment of employees. They are employed throughout the private and public sectors.

Example titles

human resources officer
personnel officer
personnel selection officer – military

recruitment specialist
staffing analyst
staffing co-ordinator

Main duties

Personnel and recruitment officers perform some or all of the following duties:

- Identify current and prospective staffing requirements, prepare and post notices and advertisements, and collect and screen applications
- Advise job applicants on employment requirements and on terms and conditions of employment
- Review candidate inventories and contact potential applicants to arrange interviews and arrange transfers, redeployment and placement of personnel
- Recruit graduates of colleges, universities and other educational institutions
- Co-ordinate and participate in selection and examination boards to evaluate candidates
- Notify applicants of results of selection process and prepare job offers
- Advise managers and employees on staffing policies and procedures
- Organize and administer staff consultation and grievance procedures
- Negotiate settlements of appeals and disputes and co-ordinate termination of employment process
- Determine eligibility to entitlements, arrange staff training and provide information or services such as employee assistance, counselling and recognition programs
- May supervise personnel clerks performing filing and record-keeping duties.

Employment requirements

- A university degree or college diploma in a field related to personnel management such as business administration, industrial relations, commerce or psychology
 - or
- Completion of a professional development program in personnel administration is usually required.
- Certification as a Certified Human Resources Professional (CHRP) may be required.
- Some experience in a clerical or administrative position related to personnel administration may be required.

Additional information

- Progression to specialist and management positions is possible with experience.

Classified elsewhere

- *Human Resources Managers* (0112)
- *Personnel Clerks* (1442)
- *Specialists in Human Resources* (1121)
- Training officers and instructors (in 4131 *College and Other Vocational Instructors*)

1224 Property Administrators

Property administrators perform administrative duties and co-ordinate activities related to the management and rental of investment property and real estate on behalf of property owners. They are employed by property and real estate management companies, property development companies and by government.

Example titles

accommodation officer
apartment rental agent
housing project manager

leasing co-ordinator, property
property administrator
property rentals manager

Main duties

Property administrators perform some or all of the following duties:

- Negotiate or approve rental or lease of various properties in a portfolio on behalf of property owners and ensure that terms of lease agreement are met
- Prepare and administer contracts for provision of property services, such as cleaning and maintenance, security services and alarm systems
- Co-ordinate the implementation of repairs, maintenance and renovations carried out on buildings and monitor progress and cost of work for property owners
- Compile and maintain records on operating expenses and income, prepare reports and review rents to ensure they are at market value
- Ensure that trouble calls received from clients or tenants are acted upon
- Administer damage deposits
- May hire and supervise rental agents, property clerks, building superintendents or other support staff performing operational, clerical or maintenance duties.

Classified elsewhere

- Building superintendents (in 6663 *Janitors, Caretakers and Building Superintendents*)
- Property clerks (in 1441 *Administrative Clerks*)
- *Real Estate Agents and Salespersons* (6232)

Employment requirements

- Completion of secondary school is required.
- Completion of training courses or a vocational program in property management or real estate may be required.
- Several years of administrative experience as a property clerk, contract clerk, or administrative officer are usually required.

1225 Purchasing Agents and Officers

Purchasing agents and officers purchase general and specialized equipment, materials and business services for use or for further processing by their establishment. They are employed throughout the public and private sectors.

Example titles

contract management officer
contracts officer
materiel management officer
procurement officer

purchaser, furniture and furnishings
purchasing agent
purchasing officer
supply officer, government

Main duties

Purchasing agents and officers perform some or all of the following duties:

- Purchase general and specialized equipment, materials or business services for use or for further processing by their establishment
- Assess requirements of an establishment and develop specifications for equipment, materials and supplies to be purchased
- Invite tenders, consult with suppliers and review quotations
- Determine or negotiate contract terms and conditions, award supplier contracts or recommend contract awards
- Establish delivery schedules, monitor progress and contact clients and suppliers to resolve problems
- May hire, train or supervise purchasing clerks.

Purchasing agents and officers may specialize in the purchase of particular materials or business services such as furniture or office equipment.

Employment requirements

- A bachelor's degree or college diploma in business administration, commerce or economics is usually required.
- Purchasing agents and officers purchasing specialized materials or business services may require a related university degree or college diploma. For example, a bachelor's degree or college diploma in engineering may be required for purchasers of industrial products.
- A certificate in purchasing from the Purchasing Management Association of Canada may be required.
- Previous experience as a purchasing clerk or as an administrative clerk may be required.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Purchasing and Inventory Clerks* (1474)
- *Purchasing Managers* (0113)
- *Retail and Wholesale Buyers* (6233)

1226 Conference and Event Planners

Conference and event planners plan, organize and co-ordinate conferences, conventions, meetings, seminars, exhibitions, trade shows, festivals and other events. They are employed by tourism associations, trade and professional associations, convention and conference centres, governments and by conference and event planning companies.

Example titles

conference and meeting planner
conference planner
conference services officer
convention co-ordinator
event planner

festival organizer
meeting planner
special events organizer
trade show planner

Main duties

Conference and event planners perform some or all of the following duties:

- Meet with trade and professional associations and other groups to promote and discuss conference, convention and trade show services
- Meet with sponsors and organizing committees to plan scope and format of events, to establish and monitor budgets and to review administrative procedures and progress of events
- Co-ordinate services for events, such as accommodation and transportation for participants, conference and other facilities, catering, signage, displays, translation, special needs requirements, audio-visual equipment, printing and security
- Organize registration of participants, prepare programs and promotional material, and publicize events
- Plan entertainment and social gatherings for participants
- Hire, train and supervise support staff required for events
- Ensure compliance with required by-laws
- Negotiate contracts for services, approve suppliers' invoices, maintain financial records, review final billing submitted to clients for events and prepare reports.

- Certification relating to special events, meetings or conference management may be required.

Classified elsewhere

- *Administrative Officers* (1221)
- *Executive Assistants* (1222)
- *Professional Occupations in Public Relations and Communications* (5124)
- *Sales Representatives – Wholesale Trade (Non-Technical)* (6411)

Employment requirements

- A university degree or college diploma in business, tourism or hospitality administration is usually required.
- Several years of experience in hospitality or tourism administration or in public relations are usually required and may substitute for formal education requirements.

1227 Court Officers and Justices of the Peace

Court officers co-ordinate the administrative and procedural functions of federal, provincial and territorial courts, such as scheduling trials and overseeing the maintenance of court records. Justices of the peace administer oaths, issue subpoenas, summonses and warrants and perform other court-related duties such as conducting bail hearings. They are employed by federal and provincial courts.

Example titles

administrator of the court
clerk of the court
commissioner of affidavits
commissioner of marriages
co-ordinator of court services
court administrator
court clerk supervisor
court officer
court registrar

deputy registrar
judicial administrator
judicial court administrator
judicial officer
justice of the peace
manager, court services
registrar of bankruptcy
Supreme Court registrar
trial co-ordinator

Main duties

Court officers perform some or all of the following duties:

- Co-ordinate administrative services and establish work priorities for court staff
- Schedule court trials and arrange pre-trial conferences and hearings
- Call courts of law to order, read charges and take pleas from defendants
- Record court commencement, trial proceedings and judgements
- Collect and record sheriff fees, transcription fees and other court administrative and services fees
- Oversee the maintenance of judicial court records
- Assist in preparing annual budgets
- May be justices of the peace.

Justices of the peace perform some or all of the following duties:

- Issue subpoenas, summonses and warrants, including search warrants
- Receive affidavits, declarations and affirmations
- Administer oaths
- Conduct bail hearings
- Release defendants on judges' orders and explain rights and obligations
- Hear evidence at trials on summary conviction offences and may preside over trials of criminal offences at the discretion of the chief judge of the jurisdiction or as provided for in federal, provincial or territorial statutes
- Perform civil marriages.

Employment requirements

- Court officers usually require a university degree in law or business or public administration or a college diploma in public administration or legal studies.
- Completion of a justice registrar, justice of the peace or other court training program is required for court officers and justices of the peace.
- Several years of experience as a court clerk or in another court service occupation are usually required.
- Justices of the peace in the provinces are appointed by the lieutenant governor in council and, in the territories, by federally appointed territorial commissioners.

Additional information

- Progression to senior positions such as senior court administrator is possible through experience.
- The duties and responsibilities of justices of the peace vary significantly depending on the level of their authority. They may be employed part-time on a fee-for-service basis in small communities. Their duties range from receiving affidavits and similar documents, to presiding in courts and hearing and determining prosecutions under provincial/territorial and federal laws.

1227 Court Officers and Justices of the Peace

Classified elsewhere

- *Administrative Officers* (1221)
- *Court Clerks* (1443)
- *Paralegal and Related Occupations* (4211)
- *Sheriffs and Bailiffs* (6461)

1228 Immigration, Employment Insurance and Revenue Officers

This unit group includes government officers who administer and enforce laws and regulations related to immigration, employment insurance, customs and tax revenue. They are employed by government agencies.

Example titles

customs inspector

customs officer

employment insurance agent

employment insurance officer

immigration agent

immigration examining officer

revenue officer

tax collection officer

tax enforcement officer

Main duties

Immigration officers perform some or all of the following duties:

- Determine admissibility of persons seeking entry into Canada by examining documents and conducting interviews
- Grant landed-immigrant status, admit persons or order detention or deportation
- Locate and apprehend persons presumed to be infringing on immigration laws
- Assist in the removal of deported people by seeking authorization from receiving countries and securing necessary travel documents
- Appear as a witness in cases related to immigration appeals.

Employment insurance officers perform some or all of the following duties:

- Determine the eligibility of persons applying for employment insurance benefits
- Ascertain the facts on such issues as reasons for loss of employment and availability for work
- Monitor the payments of benefits throughout the duration of a claim and investigate claimants when there appears to be fraud or abuse.

Customs officers and inspectors perform some or all of the following duties:

- Question persons at border points to determine the admissibility of goods and assess duty
- Inspect baggage to detect undeclared merchandise, or contraband
- Inform manufacturers and shippers of customs and laws and procedures
- Observe fabrication of articles affected by customs laws and conduct appraisals
- Board carriers arriving from foreign countries to determine nature of cargo to ensure compliance with customs and commerce laws
- Inspect goods imported by mail

- May arrest and detain individuals suspected of having committed a criminal offence under the Customs Act or certain other designated Criminal Code offences until police intervention is possible.

Excise tax revenue officers perform some or all of the following duties:

- Audit accounting records to determine income, exemptions, payable taxes, compliance with reporting regulations and existence of fraud
- Examine accounting systems and internal controls of organizations
- Provide advice on reporting and measurement procedures for goods subject to taxation
- Prepare briefs and assist in searching and seizing records, and in preparing charges for court cases.

Employment requirements

- A bachelor's degree or college diploma is usually required.
- Several years of related administrative or regulatory experience may be required.
- Completion of specialized government training is required.

Additional information

- Progression to managerial positions in these fields is possible with experience.

1228 Immigration, Employment Insurance and Revenue Officers

Classified elsewhere

- *Financial Auditors and Accountants* (1111)
- Managers responsible for immigration or employment insurance (in 0411 *Government Managers – Health and Social Policy Development and Program Administration*)
- Managers responsible for taxation revenue or customs (in 0412 *Government Managers – Economic Analysis, Policy Development and Program Administration*)
- *Other Financial Officers* (1114)
- *Social Policy Researchers, Consultants and Program Officers* (4164)

1231 Bookkeepers

Bookkeepers maintain complete sets of books, keep records of accounts, verify the procedures used for recording financial transactions, and provide personal bookkeeping services. They are employed throughout the private and public sectors, or they may be self-employed.

Example titles

accounting bookkeeper

bookkeeper

Main duties

Bookkeepers perform some or all of the following duties:

- Keep financial records and establish, maintain and balance various accounts using manual and computerized bookkeeping systems
- Post journal entries and reconcile accounts, prepare trial balance of books, maintain general ledgers and prepare financial statements
- Calculate and prepare cheques for payrolls and for utility, tax and other bills
- Complete and submit tax remittance forms, workers' compensation forms, pension contribution forms and other government documents
- Prepare tax returns and perform other personal bookkeeping services
- Prepare other statistical, financial and accounting reports.

Additional information

- Progression to professional accounting occupations is possible with additional training.

Classified elsewhere

- *Accounting and Related Clerks* (1431)
- *Banking, Insurance and Other Financial Clerks* (1434)
- *Financial Auditors and Accountants* (1111)
- *Payroll Clerks* (1432)

Employment requirements

- Completion of secondary school is required.
- Completion of a college program in accounting, bookkeeping or a related field
 - or*
 - Completion of two years (first level) of a recognized professional accounting program (e.g., Chartered Accounting, Certified General Accounting)
 - or*
 - Courses in accounting or bookkeeping combined with several years of experience as a financial or accounting clerk are required.

1232 Loan Officers

Loan officers examine, evaluate and process credit and loan applications. They are employed by banks, trust companies, credit unions and similar financial institutions.

Example titles

credit officer
loan officer

mortgage officer

Main duties

Loan officers perform some or all of the following duties:

- Interview applicants for personal, mortgage, student and business loans
- Research and evaluate loan applicant's financial status, references, credit and ability to repay the loan
- Complete credit and loan documentation
- Submit credit and loan applications to management with recommendations for approval or rejection; or approve or reject applications within authorized limits ensuring that credit standards of the institution are respected
- Promote the sale of credit and loan services
- Review and update credit and loan files
- Prepare statements on delinquent accounts and forward irreconcilable accounts for collector action.

Employment requirements

- Completion of secondary school and extensive general banking experience is usually required.
- A bachelor's degree or college diploma related to commerce or economics may be required.
- Completion of a loan or credit training program, ranging from six to twelve months, is usually required.

Additional information

- Progression to credit and loan management positions is possible with experience.

Classified elsewhere

- Credit and loan managers (in 0122 *Banking, Credit and Other Investment Managers*)

1233 Insurance Adjusters and Claims Examiners

Insurance adjusters investigate insurance claims and determine the amount of loss or damages covered by insurance policies. They are employed in claims departments of insurance companies or as independent adjusters. Insurance claims examiners examine claims investigated by insurance adjusters and authorize payments. They are employed at head offices or branches of insurance companies.

Example titles

adjuster
claims examiner

claims representative
insurance adjuster

Main duties

Insurance adjusters perform some or all of the following duties:

- Investigate circumstances surrounding insurance claims to determine validity of claim
- Inspect automobile, home or other property damage
- Take statements and consult with claimants, accident witnesses, doctors and other relevant individuals and examine records or reports
- Determine amount of loss or damages covered by insurance policies
- Negotiate settlement of claims
- Prepare adjustment reports.

Insurance claims examiners perform some or all of the following duties:

- Review, examine, calculate and authorize insurance claims investigated by insurance adjusters
- Examine adjusters' reports and similar insurance claims or precedents to determine extent of insurance coverage
- Ensure claims are valid and settlements are made according to company practices and procedures
- Consult lawyers, doctors or other relevant individuals to discuss insurance claims
- Approve automobile, fire, life, disability, dental or other insurance claims.

Employment requirements

- Completion of secondary school is required.
- A bachelor's degree, college diploma or some post-secondary education
or

Several years of experience as a clerk in the claims department or other general insurance experience are required.

- Several years of on-the-job training and completion of insurance industry courses and training programs are required.
- Independent adjusters require a provincial licence issued by the Superintendent of Insurance in the province or territory of employment.

Additional information

- Completion of educational programs through the Insurance Institute of Canada or its provincial counterparts entitles insurance adjusters and claims examiners to professional recognition as a Chartered Insurance Professional (CIP), and with additional university courses, as a Fellow Chartered Insurance Professional (FCIP).

Classified elsewhere

- *Supervisors, Finance and Insurance Clerks* (1212)

1234 Insurance Underwriters

Insurance underwriters review and evaluate insurance applications to determine insurance risks, insurance premiums and extent of insurance coverage according to company policies. Insurance underwriters are employed at head and branch offices of insurance companies.

Example titles

group underwriter
insurance underwriter

liability underwriter
property underwriter

Main duties

Insurance underwriters perform some or all of the following duties:

- Review individual and group applications for automobile, fire, health, liability, life, property, marine, aircraft and other insurance
- Evaluate new and renewal applications to determine insurance risks, insurance premiums, extent of insurance coverage and other conditions of the insurance contract using medical reports, rate tables and other documents and reference materials; adjust premiums, coverage or risk itself to make acceptance of new and renewal applications possible
- Approve sale of insurance policies and ensure compliance with government regulations
- Provide recommendations on individual or group insurance plan designs
- Provide underwriting advice and answer inquiries from clients and from insurance agents, consultants and other company personnel
- Prepare underwriting reports and update insurance forms when necessary.

Employment requirements

- Completion of secondary school and some general insurance experience
 - or*
 - A bachelor's degree, college diploma or some post-secondary education is required.
- Several years of on-the-job training and completion of insurance industry underwriting courses and training programs are required.

Additional information

- Progression to management positions, such as underwriter manager, is possible with experience.
- Completion of educational programs through the Insurance Institute of Canada or its provincial counterparts entitles insurance underwriters to professional recognition as an Associate of the Insurance Institute of Canada (A.I.I.C.) and, with additional university courses, as a Fellow of the Insurance Institute of Canada (F.I.I.C.).

Classified elsewhere

- *Insurance Agents and Brokers* (6231)
- Insurance managers (in 0121 *Insurance, Real Estate and Financial Brokerage Managers*)

1235 Assessors, Valuators and Appraisers

Assessors, valuators and appraisers determine the value of land, businesses, estates and other real property, for purposes of sale, purchase, taxation or disposal of assets. Appraisers also determine the value of personal and household items. Assessors, valuators and appraisers are employed by government agencies, real estate firms and other private companies, or they may be self-employed.

Example titles

accredited appraiser
business valuator
property assessor

property valuator
real estate appraiser

Main duties

Assessors perform some or all of the following duties:

- Assess value of land, building, structures, machinery, equipment and property improvements for purposes of taxation, grants and regional planning and prior to sale or purchase
- Review and analyze data such as past sales, title searches, engineering and alignment maps, soil maps, subdivision plans, water and sewer plans, location cost data and easements
- Explain assessment process to ratepayers.

Assessors may specialize in advising and consulting in a specific field of assessment such as residential, commercial, industrial, institutional or farm lands.

Valuators perform some or all of the following duties:

- Collect and analyze financial records of a business, such as financial statements, budgets, projections and sales data, to assess its competitiveness or to estimate its market value
- Prepare reports for estate planning, matrimonial litigation, insurance and business losses
- Appear as an expert witness before courts, security regulators and other regulatory boards and commissions.

Appraisers perform some or all of the following duties:

- Appraise value of property, building, industrial and commercial machinery and equipment and personal and household items
- Prepare appraisal reports for lending agencies, insurance companies, government departments, courts, attorneys, creditors, buyers or auctioneers.

Appraisers may specialize in a specific type of appraisal such as real estate appraisal.

Employment requirements

- Assessors require a college diploma in municipal assessment
and
Accreditation with the municipal assessment association of the province.
- Valuators usually require a bachelor's degree or college diploma in accounting, business or commerce
and
Accreditation with the Canadian Institute of Chartered Business Valuators based on successful completion of its business and security valuation program.
- Appraisers require a college diploma or vocational training in the field of appraisal
or
Several years of experience in a position related to the field of appraisal.
- In Quebec, membership with l'Ordre des évaluateurs agréés du Québec (OEAQ) is required to use the title chartered appraiser
- Real estate appraisers usually require several years of experience as a real estate agent, right-of-way agent or property administrator and may require Canadian residential appraiser certification.
- Appraisers of residential, commercial or industrial property require accreditation with the Appraisal Institute of Canada.

Additional information

- Progression to management positions in each field is possible with experience.

1235 Assessors, Valuators and Appraisers

Classified elsewhere

- *Financial and Investment Analysts* (1112)
- *Financial Auditors and Accountants* (1111)
- *Insurance Adjusters and Claims Examiners* (1233)
- Market analysts (in 4163 *Business Development Officers and Marketing Researchers and Consultants*)
- *Property Administrators* (1224)
- Right-of-way agents (in 1225 *Purchasing Agents and Officers*)

1236 Customs, Ship and Other Brokers

Customs brokers clear goods through customs and to their destination on behalf of importer and exporter clients. Ship brokers buy and sell cargo space on ships and buy and sell ships, yachts and other watercraft on behalf of clients. This unit group also includes other brokers, not elsewhere classified, who negotiate commercial transactions or other services between parties on behalf of clients. They are employed by customs, ship or other brokerage establishments or may be self-employed.

Example titles

cargo broker
chartered ship broker
customs broker

gas broker
licensed customs broker
ship broker

Main duties

Customs brokers perform some or all of the following duties:

- Prepare and process import/export documents and other forms on behalf of clients according to customs regulations, laws and procedures
- Sign import/export documents on behalf of client, using power of attorney
- Arrange for payment of duties, taxes, storage and transportation of imported goods and bonds to cover duty goods
- Quote duty and tax rates on commodities for clients
- Provide advice to clients on export and import restrictions, tariff systems, letters of credit, insurance requirements and other custom related matters
- May represent client before administrative tribunals or in other dealings with government officials.

Ship brokers perform some or all of the following duties:

- Buy and sell cargo space on ships on behalf of individuals, companies and governments
- Consult trade publications and other sources to provide information to clients on available cargo space, destinations, rates and departure locations and times, and arrange ship charters for clients
- Negotiate rates and terms and prepare contracts and other papers
- Buy and sell ships, yachts and other watercraft on behalf of clients
- Inspect vessels, explain features and negotiate price when purchasing or selling for clients
- Arrange for insurance coverage for cargo or for ships
- Arrange for registration and licensing of ships.

Employment requirements

- Completion of secondary school is required.
- Some post-secondary education in commerce or a related field may be required.
- Customs brokers require several years of on-the-job training and completion of a customs brokers training program through the Canadian Institute of Customs Brokers.
- A customs broker licence, issued by the Canada Customs and Revenue Agency, is required for an individual or company to operate a customs brokerage business.
- Ship brokers selling cargo space on ships usually require several years of on-the-job training or related experience such as shipping company scheduling experience. Ship brokers selling watercraft usually require in-depth experience with, and knowledge of, various watercraft.
- Correspondence courses from the Institute of Chartered Ship Brokers are available for ship brokers.

Additional information

- There is no mobility between the different types of brokers in this unit group.

Classified elsewhere

- Insurance brokers (in 6231 *Insurance Agents and Brokers*)
- *Insurance, Real Estate and Financial Brokerage Managers* (0121)
- *Securities Agents, Investment Dealers and Brokers* (1113)

1241 Secretaries (Except Legal and Medical)

Secretaries perform a variety of administrative duties in support of managerial and professional employers. They are employed throughout the private and public sectors.

Example titles

executive secretary (except legal and medical)
private secretary

secretary (except legal and medical)
technical secretary

Main duties

Secretaries perform some or all of the following duties:

- Prepare, key in, edit and proofread correspondence, invoices, presentations, brochures, publications, reports and related material from shorthand, machine dictation and handwritten copy using computers
- Open and distribute incoming regular and electronic mail and other material and co-ordinate the flow of information internally and with other departments and organizations
- Schedule and confirm appointments and meetings of employer
- Order office supplies and maintain inventory
- Answer telephone and electronic enquiries and relay telephone calls and messages
- Set up and maintain manual and computerized information filing systems
- Determine and establish office procedures
- Greet visitors, ascertain nature of business and direct visitors to employer or appropriate person
- Record and prepare minutes of meetings
- Arrange travel schedules and make reservations
- May compile data, statistics and other information and may conduct research
- May organize conferences
- May supervise and train other staff in procedures and in use of current software.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a one- or two-year college or other program for secretaries

or

Previous clerical experience is required.

Classified elsewhere

- *Court Recorders and Medical Transcriptionists* (1244)
- *Executive Assistants* (1222)
- *Legal Secretaries* (1242)
- *Medical Secretaries* (1243)
- Office managers (in 1221 *Administrative Officers*)

1242 Legal Secretaries

Legal secretaries perform a variety of secretarial and administrative duties in law offices, legal departments of large firms, real estate companies, land title offices, municipal, provincial and federal courts and government.

Example titles

legal secretary

real estate secretary

litigation secretary

Main duties

Legal secretaries perform some or all of the following duties:

- Prepare and key in correspondence and legal documents, such as deeds, wills, affidavits and briefs, from handwritten copy, shorthand and machine dictation using computers
- Review and proofread documents and correspondence to ensure compliance with legal procedures and grammatical usage
- Schedule appointments, meetings and conferences for employer
- Set up and maintain filing systems, utilizing knowledge of legal records and procedures and frequently controlling confidential materials and documents
- Open and distribute regular and electronic incoming mail and other material and co-ordinate the flow of information internally and with other departments or organizations
- Determine and establish office procedures and routines
- May supervise and train other staff in procedures and in the use of current software
- May attend court, meetings or conferences to take notes, minutes and dictation
- May perform other general office work as required including preparing financial statements.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a one- or two-year college or other program for secretaries or legal secretaries is usually required.

Classified elsewhere

- By-law clerks (in 1441 *Administrative Clerks*)
- Court recorders (in 1244 *Court Recorders and Medical Transcriptionists*)
- *Paralegal and Related Occupations* (4211)

1243 Medical Secretaries

Medical secretaries perform a variety of secretarial and administrative duties in doctor's offices, hospitals, medical clinics and other medical settings.

Example titles

medical secretary

ward secretary

Main duties

Medical secretaries perform some or all of the following duties:

- Schedule and confirm medical appointments and receive and communicate messages for medical staff and patients
- Prepare, key in, edit, and proofread medical records, reports, articles, case histories and correspondence from machine dictation, shorthand and handwritten notes using computers
- Interview patients in order to complete forms, documents and case histories
- Complete insurance and other claim forms
- Initiate and maintain confidential medical files and records
- Prepare financial statements and billing procedures
- Order supplies and maintain inventory
- Determine and establish office procedures and routines
- May supervise and train other staff in procedures and in use of current software.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a one- or two-year college program or other specialized courses for secretaries or medical secretaries is usually required.

Classified elsewhere

- Medical records clerks (in 1413 *Records Management and Filing Clerks*)
- Medical transcriptionists (in 1244 *Court Recorders and Medical Transcriptionists*)

1244 Court Recorders and Medical Transcriptionists

Court recorders record and transcribe verbatim the proceedings of courts, legislative assemblies and committees, and prepare dictated reports, correspondence and statistics that require knowledge of legal terminology. They are employed by courts of law, provincial and federal legislative assemblies and committees, or they may be self-employed. Medical transcriptionists record and transcribe surgical proceedings, medical records and other reports requiring knowledge of medical terminology. They are employed by hospitals, medical clinics and doctors' offices, or they may be self-employed.

Example titles

court recorder
court reporter
court stenographer

Hansard reporter
medical transcriptionist
transcriptionist

Main duties

Court recorders perform some or all of the following duties:

- Record verbatim proceedings of courtroom using computerized recording equipment, electronic stenograph machine or stenomask
- Respond to requests during court sessions to read back verbatim evidence
- Transcribe recorded proceedings in accordance with established formats
- Verify accuracy of transcripts by checking copy against original record of proceedings and accuracy of rulings by checking with judge
- Research and locate quotes to ensure accuracy
- Respond to requests for transcripts ordered by judges, lawyers or the public
- File and store shorthand notes of court session.

Medical transcriptionists perform some or all of the following duties:

- Transcribe machine dictation or rough notes from medical reports, correspondence, medical records and patient information
- Proofread work for typographical and grammatical errors.

Employment requirements

- Completion of secondary school is required.
- Completion of a college or other program in court reporting is required.
- Certified Medical Transcriptionist (CMT) or Chartered Shorthand Reporter (CSR) certificate may be required.

Additional information

- There is some mobility between occupations in this unit group and other occupations requiring similar knowledge of legal or medical terminology, such as legal or medical secretary.

Classified elsewhere

- *Legal Secretaries* (1242)
- *Medical Secretaries* (1243)

1411 General Office Clerks

General office clerks prepare correspondence, reports, statements and other material, operate office equipment, answer telephones and perform clerical duties of a general nature according to established procedures. They are employed in offices throughout the public and private sectors.

Example titles

general office clerk
office assistant
office clerk

typist
word processor operator

Main duties

General office clerks perform some or all of the following duties:

- Key in, edit, proofread and finalize correspondence, reports, statements, invoices, forms, presentations and other documents, from notes or dictaphone, using computers
- Respond to telephone, in person or electronic enquiries or forward to appropriate person
- Provide general information to clients and the public
- Photocopy and collate documents for distribution, mailing and filing
- Maintain and prepare reports from manual or electronic files, inventories, mailing lists and databases
- Process incoming and outgoing mail, manually or electronically
- Send and receive messages and documents using fax machine or electronic mail
- May perform bookkeeping tasks such as preparing invoices and bank deposits
- May sort, process and verify applications, receipts, expenditures, forms and other documents
- May order office supplies, service office equipment and arrange for servicing in the case of major repairs.

Employment requirements

- Completion of secondary school is usually required.
- Completion of secondary school or college business or commercial courses is usually required.

Additional information

- Progression to supervisory or office management positions is possible with experience.

Classified elsewhere

- *Administrative Clerks* (1441)
- *Data Entry Clerks* (1422)
- *Receptionists and Switchboard Operators* (1414)
- *Records Management and Filing Clerks* (1413)
- *Secretaries (Except Legal and Medical)* (1241)
- *Supervisors, General Office and Administrative Support Clerks* (1211)

1413 Records Management and Filing Clerks

Records management clerks process, code, store and retrieve records and documents and apply retention and disposal schedules according to established policies and procedures. Filing clerks file papers, records, documents and other material according to subject matter or other filing system. Records management and filing clerks are employed throughout the private and public sectors. This unit group also includes health records technicians, who maintain systems for the collection, storage, retrieval and retention of health information. Health records technicians are employed by hospitals, clinics and other health care institutions.

Example titles

aircraft records clerk
file and classification clerk
file clerk
health records technician
medical records clerk
microfilm records searcher

records classifier
records clerk
records filing-system clerk
records management clerk
technical records clerk

Main duties

Records management clerks perform some or all of the following duties:

- Classify, code, cross-reference, log and store records
- Maintain indexes for classification systems
- Operate information retrieval systems and respond to requests for records
- Review files periodically to ensure they are complete and correctly classified
- Label files according to retention and disposal schedules and prepare files for disposal
- Maintain access lists for security classified records
- Compile statistics and reports on activities within records services.

Filing clerks perform some or all of the following duties:

- Sort material that is to be filed according to particular filing systems
- File material in drawers, cabinets and storage boxes
- Locate and remove materials from files when requested
- Keep records of materials filed and removed.

Health records technicians perform some or all of the following duties:

- Classify, code, cross-reference and store health records and related information
- Maintain indexes for classification systems
- Operate information retrieval systems and respond to requests for health record information

- Prepare medical, social and administrative statistics
- Apply knowledge of medical terminology, physiology and treatments.

Employment requirements

- Health records technicians require completion of a two- to three-year college or other program in health records management.
- Records management clerks and filing clerks usually require completion of secondary school.
- Records management clerks may require completion of college or other program in records management and usually require experience as a filing clerk.

Additional information

- Health records technicians are nationally certified and are eligible for employment in all provinces and territories.
- Progression to supervisory positions is possible with experience.

1413 Records Management and Filing Clerks

Classified elsewhere

- *General Office Clerks* (1411)
- Health records administrators (in 0114 *Other Administrative Services Managers*)
- Health record unit supervisors (in 1211 *Supervisors, General Office and Administrative Support Clerks*)
- *Library Clerks* (1451)
- Library technicians (in 5211 *Library and Archive Technicians and Assistants*)
- Records management specialists (in 1122 *Professional Occupations in Business Services to Management*)
- Records management supervisors (in 1211 *Supervisors, General Office and Administrative Support Clerks*)

1414 Receptionists and Switchboard Operators

Receptionists and switchboard operators greet people arriving at offices, hospitals and other establishments, direct visitors to appropriate person or service, answer and forward telephone calls, take messages, schedule appointments and perform other clerical duties. They are employed by hospitals, medical and dental offices and in other offices throughout the public and private sectors.

Example titles

admitting clerk	medical receptionist
answering service operator	reception clerk
business receptionist	receptionist
dental receptionist	switchboard operator
front desk clerk (except hotel)	telereceptionist
hospital admitting clerk	

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Receptionists greet people coming into offices and other establishments, direct them to the appropriate contacts or services, and provide information in person and by phone and may perform clerical duties and maintain front desk security and security access lists.
- Hospital admitting clerks interview patients to obtain and process information required to provide hospital and medical services.
- Medical and dental receptionists greet patients, schedule appointments, using manual or computerized systems, receive and record payment for services, and direct patients to appropriate areas.
- Switchboard operators operate a telephone system or switchboard to answer, screen and forward telephone calls, taking messages and providing information as required; and may perform clerical duties.
- Answering service operators answer telephones and record and relay messages.
- Front desk clerks in a variety of institutional and commercial settings direct customers to appropriate areas, record bookings, handle credit card checks, receive payment, issue receipts, arrange tour reservations and deal with emergency situations.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training may be provided.

Additional information

- Some receptionists are required to be bilingual or multilingual to perform their duties.

Classified elsewhere

- *Customer Service, Information and Related Clerks* (1453)
- *Hotel Front Desk Clerks* (6435)
- Receptionist supervisors (in *1211 Supervisors, General Office and Administrative Support Clerks*)
- *Telephone Operators* (1424)

1422 Data Entry Clerks

Data entry clerks input coded, statistical, financial and other information into computerized databases, spreadsheets or other templates using a keyboard, mouse, or optical scanner, speech recognition software or other data entry tools. They are employed in the private and public sectors.

Example titles

data control clerk
data entry operator
data input clerk

data processor
payment entry clerk

Main duties

Data entry clerks perform some or all of the following duties:

- Receive and register invoices, forms, records and other documents for data capture
- Input data into computerized databases, spreadsheets or other templates using a keyboard, mouse, or optical scanner, speech recognition software or other data entry tools
- Import and/or export data between different kinds of software
- Verify accuracy and completeness of data
- Identify, label and organize electronic storage media
- Maintain libraries of electronic storage media

Employment requirements

- Completion of secondary school may be required.
- College or other courses in data entry may be required.

Additional information

- Progression to senior positions is possible with experience.

Classified elsewhere

- *General Office Clerks* (1411)
- *Supervisors, General Office and Administrative Support Clerks* (1211)

1423 Desktop Publishing Operators and Related Occupations

Desktop publishing operators use computers to enter copy into a typesetting system or operate typesetting output equipment to produce text that is ready to print. They are employed by firms that specialize in typesetting, commercial printing companies, publishing and printing companies and various establishments in the public and private sectors that have in-house printing departments. This unit group also includes markup persons and pre-flight operators.

Example titles

Braille keyboard operator
compositor – typesetting
computer typesetter
copy marker – typesetting
desktop compositor
desktop publishing (DTP) operator
file preparation operator

input operator – typesetting
markup person
output operator – typesetting
phototypesetter operator
pre-flight operator – printing
typographer

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Desktop publishing operators operate desktop publishing software and equipment to design, lay out and produce camera-ready copy and may perform pre-flight operator duties.
- Markup persons mark copy with computer codes and typographic instructions before it is typeset.
- Typesetting input operators input copy, codes or commands and subsequent corrections into typesetting device or system; operate media conversion equipment to process and format copy transmitted through telecommunications.
- Typesetting output operators operate and tend typesetting output devices, load and process photosensitive material and perform routine maintenance.
- Pre-flight operators use computer software to confirm cost estimates, evaluate composition of orders, assess graphic images, and check fonts and other details to ensure that customers' files are complete before going to print.
- File preparation operators operate computers, image setters and digital proofers to transfer output or data to hard copy form.

Employment requirements

- Completion of secondary school is required.
- Completion of a college program in graphic arts, or other training in typography, computer typesetting or desktop publishing, is usually required.

Additional information

- Progression to supervisory positions is possible through experience.

Classified elsewhere

- Copy stylists, mechanical artists and paste-up artists (in 5223 *Graphic Arts Technicians*)
- Desktop publishing operator supervisors (in 1211 *Supervisors, General Office and Administrative Support Clerks*)
- *Graphic Designers and Illustrators* (5241)
- Proofreaders (in 1452 *Correspondence, Publication and Related Clerks*)

1424 Telephone Operators

Telephone operators operate computerized telephone systems to advance and assist the completion of telephone calls. They are employed by telephone companies.

Example titles

directory assistance operator
telephone operator

telephone service assistant
toll operator

Main duties

Telephone operators perform some or all of the following duties:

- Operate telephone systems to advance and complete customers' telephone calls such as long distance, pay telephone, mobile radio/telephone, person to person and emergency calls
- Operate computerized directory listing systems or consult printed directories to provide directory assistance for customers
- Arrange teleconferences, provide emergency services and relay phone service to people with disabilities
- Calculate billing charges and record billing information.

Employment requirements

- Completion of secondary school is required.
- On-the-job training is provided.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Receptionists and Switchboard Operators (1414)*
- Supervisors of telephone operators (in 1211)
Supervisors, General Office and Administrative Support Clerks)

1431 Accounting and Related Clerks

Accounting and related clerks calculate, prepare and process bills, invoices, accounts payable and receivable, budgets and other financial records according to established procedures. They are employed throughout the private and public sectors.

Example titles

accounting clerk	deposit clerk
accounts payable clerk	finance clerk
accounts receivable clerk	freight-rate clerk
audit clerk	income tax return preparer
billing clerk	invoice clerk
budget clerk	ledger clerk
costing clerk	tax clerk

Main duties

Accounting and related clerks perform some or all of the following duties:

- Calculate, prepare and issue documents related to accounts such as bills, invoices, inventory reports, account statements and other financial statements using computerized and manual systems
- Code, total, batch, enter, verify and reconcile transactions such as accounts payable and receivable, payroll, purchase orders, cheques, invoices, cheque requisitions, and bank statements in a ledger or computer system
- Compile budget data and documents based on estimated revenues and expenses and previous budgets
- Prepare period or cost statements or reports
- Calculate costs of materials, overhead and other expenses based on estimates, quotations, and price lists
- Respond to customer inquiries, maintain good customer relations and solve problems
- Perform related clerical duties, such as word processing, maintaining filing and record systems, faxing and photocopying.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college or other courses certified by the Certified General Accountants Association of Canada, Canadian Securities Institute or Canadian Bookkeepers Association may be required.
- Some accounting clerks must be bondable.

Additional information

• Progression to supervisory or skilled financial occupations, such as accounts payable supervisor, bookkeeper or office manager is possible with additional training and experience.

Classified elsewhere

- *Banking, Insurance and Other Financial Clerks* (1434)
- *Bookkeepers* (1231)
- *Collectors* (1435)
- *Financial Auditors and Accountants* (1111)
- *Payroll Clerks* (1432)
- *Supervisors, Finance and Insurance Clerks* (1212)

1432 Payroll Clerks

Payroll clerks collect, verify and process payroll information and determine pay and benefit entitlements for employees within a department, company or other establishment. They are employed by payroll administration companies and by establishments throughout the private and public sectors.

Example titles

benefits officer	pay clerk
pay advisor	payroll clerk
pay and benefits administrator	payroll officer
pay and benefits clerk	salary administration officer

Main duties

Payroll clerks perform some or all of the following duties:

- Maintain records of employee attendance, leave and overtime to calculate pay and benefit entitlements, in Canadian and other currencies, using manual or computerized systems
- Prepare and verify statements of earnings for employees, indicating gross and net salaries and deductions such as taxes, union dues, garnishments and insurance and pension plans
- Prepare employee payments and benefit payments by cheque or electronic transfer
- Complete, verify and process forms and documentation for administration of benefits such as pension plans, leaves, share savings, employment and medical insurance
- Prepare T4 statements and other statements
- Provide information to employees on payroll matters, benefit plans and collective agreement provisions
- Compile statistical reports, statements, and summaries related to pay and benefits accounts
- Prepare and balance period-end reports and reconcile issued payrolls to bank statements.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college or other courses in accounting, bookkeeping or payroll administration
or
Experience as a financial clerk is usually required.
- Payroll association certification may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Administrative Clerks* (1441)
- *Personnel and Recruitment Officers* (1223)
- *Personnel Clerks* (1442)
- Supervisors of payroll clerks (in 1212 *Supervisors, Finance and Insurance Clerks*)

1433 Customer Service Representatives – Financial Services

Customer service representatives in this unit group process customers' financial transactions and provide information on related banking products and services. They are employed by banks, trust companies, credit unions and similar financial institutions.

Example titles

bank teller

credit union teller

financial customer service representative
foreign exchange teller – financial services

Main duties

Customer service representatives in this unit group perform some or all of the following duties:

- Process customer cash deposits and withdrawals, cheques, transfers, bills, credit card payments, money orders, certified cheques and other related banking transactions
- Obtain and process information required for the provision of services, such as opening accounts and savings plans and purchasing bonds
- Sell travellers' cheques, foreign currency and money orders
- Balance daily transactions using computer programs, calculators and adding machines
- Sort and file deposit slips and cheques
- Prepare customer statements and other correspondence for mailing
- Answer enquiries and resolve problems or discrepancies concerning customers' accounts.

Employment requirements

- Completion of secondary school is required.
- A business college diploma may be required.
- On-the-job training is provided.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Banking, Insurance and Other Financial Clerks* (1434)
- *Customer Service, Information and Related Clerks* (1453)
- *Supervisors, Finance and Insurance Clerks* (1212)

1434 Banking, Insurance and Other Financial Clerks

Banking, insurance and other financial clerks compile, process and maintain banking, insurance and other financial information. They are employed by banks, credit companies, private and public insurance establishments, investment firms and other financial establishments throughout the private and public sectors.

Example titles

actuarial clerk
bank clerk
credit clerk
dental claims clerk
dividend calculation clerk
insurance clerk – financial sector
insurance rater

ledger control clerk
loan clerk – financial sector
mortgage clerk
premium rater – insurance
real estate clerk
securities clerk – financial sector

Main duties

Bank clerks perform some or all of the following duties:

- Compile records of deposits, withdrawals, loan and mortgage payments, cheques and purchase, sale and exchange of securities
- Process loan and mortgage applications, loan and mortgage payments, retirement savings plan applications, term deposits, drafts and money orders
- Verify and balance automatic teller machine transactions and ledger entries, calculate service charges and interest payments and notify customers regarding account discrepancies and captured bank cards
- Answer enquiries and provide information on banking products, policies and services
- May sell drafts, money orders, travellers' cheques and foreign currency, rent safety deposit boxes and open and close savings, chequing and other accounts.

Insurance clerks perform some or all of the following duties:

- Process enrolments, cancellations, claims transactions, policy changes and premium payments
- Review insurance applications and verify insurance coverage, premiums paid and other insurance information
- Calculate insurance premiums, pension benefits and annuity payments
- Compile and maintain claims data, rates and insurance data and records
- Answer enquiries and provide information on insurance products, policies and services.

Other financial clerks in this unit group perform some or all of the following duties:

- Compile and maintain rental, sale and other real estate listings
- Compile and maintain stock, bond and other securities listings
- Sort, verify and process real estate, securities and other financial transactions
- Answer enquiries and reply to correspondence.

Employment requirements

- Completion of secondary school is required.
- A business college diploma may be required.
- On-the-job training and short-term training courses or programs specific to the financial establishment are usually required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Bookkeepers* (1231)
- *Customer Service, Information and Related Clerks* (1453)
- *Customer Service Representatives – Financial Services* (1433)
- *General Office Clerks* (1411)
- *Supervisors, Finance and Insurance Clerks* (1212)

1435 Collectors

Collectors collect payments on overdue accounts and bad cheques and locate debtors to make collection arrangements. They are employed by collection agencies, utility companies, department stores, loan companies, banks and credit unions, and by financial and licensing departments within governments.

Example titles

bill collector
collection clerk
collection officer (except taxation)
collections investigation officer

collector
credit and collection clerk
locator – collection
skip tracer – collection

Main duties

Collectors perform some or all of the following duties:

- Notify debtors of overdue payments and accounts by telephone, mail, and registered mail, and continue the notification process if reply is not received
- Resolve collection issues by making payment arrangements by telephone or visit to debtor
- Recommend legal action or discontinuation of service in cases where payment is not forthcoming
- Trace and locate debtors, and may contact debtors' friends, neighbours, relatives and employers to obtain information
- Answer correspondence, prepare reports and maintain records and files related to collection work
- May work with on-line accounts and systems.

Additional information

- Progression to senior or supervisory positions is possible with experience.

Classified elsewhere

- Accounts receivable clerks (in 1431 *Accounting and Related Clerks*)
- Collections supervisors (in 1212 *Supervisors, Finance and Insurance Clerks*)
- Tax collection officers (in 1228 *Immigration, Employment Insurance and Revenue Officers*)

Employment requirements

- Completion of secondary school is required.
- A business college diploma may be required.
- A period of on-the-job training is often provided for collection clerks and collection officers.
- A collections licence issued by the province or territory of employment is usually required.

1441 Administrative Clerks

Administrative clerks compile, verify, record and process forms and documents, such as applications, licences, permits, contracts, registrations and requisitions, in accordance with established procedures, guidelines and schedules. They are employed throughout the private and public sectors.

Example titles

administrative clerk
application clerk
authorization clerk
by-law clerk
customs clerk
documentation clerk
import clerk

licence clerk
office administration clerk
passport clerk
registration clerk
registry clerk
ward clerk – hospital
warranty clerk

Main duties

Administrative clerks perform some or all of the following duties:

- Compile, verify, record and process applications, licences, permits, contracts, registrations, requisitions, and other forms and documents in accordance with established procedures and schedules, using computerized and manual processing systems
- Authorize and issue licences, permits, registration papers, reimbursements or other material after requesting documents have been processed and approved
- Maintain inventory of office supplies and order supplies as required
- Prepare reports and presentations and provide information to staff and general public regarding company and program rules, regulations and procedures
- Assist in the co-ordination of administrative procedures such as budget submissions, contracts administration and work schedules
- May be responsible for some accounting tasks
- May organize and co-ordinate flow of work for general office clerks and data entry clerks.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college or other courses in business administration is usually required.

Additional information

- Progression to supervisory positions is possible with experience.
- Progression to officer level positions is possible with additional training and experience.

Classified elsewhere

- *Administrative Officers* (1221)
- *Court Clerks* (1443)
- *Executive Assistants* (1222)
- *General Office Clerks* (1411)
- *Personnel Clerks* (1442)
- *Supervisors, General Office and Administrative Support Clerks* (1211)

1442 Personnel Clerks

Personnel clerks assist personnel officers and human resources specialists and compile, maintain and process information relating to staffing, recruitment, training, labour relations, performance evaluations and classifications. They are employed in personnel departments throughout the private and public sectors.

Example titles

classification clerk – human resources
employment clerk
human resources assistant
human resources clerk

labour relations clerk
personnel services clerk
staffing clerk
training clerk

Main duties

Personnel clerks perform some or all of the following duties:

- Process, verify and register documentation relating to personnel activities such as staffing, recruitment, training, grievances, performance evaluations and classifications
- Maintain and update manual and computerized filing and registration systems, and compile and prepare reports and documents relating to personnel activities
- Respond to telephone and written enquiries from staff and the general public regarding personnel matters
- Arrange for advertising or posting of job vacancies, assist in screening and rating of job applicants, and conduct reference checks
- Administer and score employment tests, such as keyboarding and proofreading tests
- Arrange for in-house and external training activities.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college or other courses in personnel administration may be required.
- Some clerical experience may be required.

Additional information

- Progression to supervisory positions is possible with experience.
- Progression to officer level positions is possible with additional training and experience.

Classified elsewhere

- *Administrative Clerks* (1441)
- *College and Other Vocational Instructors* (4131)
- *Payroll Clerks* (1432)
- *Personnel and Recruitment Officers* (1223)
- *Specialists in Human Resources* (1121)

1443 Court Clerks

This unit group includes those who perform support functions in courts of law, such as calling court to order, preparing court dockets and maintaining exhibits. Court clerks are employed by federal and provincial courts.

Example titles

court clerk
court clerk-crier
criminal court clerk

judicial clerk
provincial court clerk

Main duties

Court clerks perform some or all of the following duties:

- Call courts of law to order; read charges; take pleas from defendants; swear in witnesses and perform other clerical functions in the courtrooms
- Prepare court files, court dockets and other documents
- Record main court proceedings, including pleas, names of witnesses, dates, times and rulings
- Manage care and custody of court exhibits
- Prepare documents for and participate in jury selection
- Update and maintain court office paper and electronic indexes and files on actions taken by court or in response to court decisions
- Receive, disburse and account for fines, fees and trust monies
- Assist the public in court offices.

Employment requirements

- Completion of secondary school is required.
- On-the-job training is provided.

Additional information

- Progression to supervisory or court officer positions is possible with experience.

Classified elsewhere

- *Court Officers and Justices of the Peace* (1227)
- *Court Recorders and Medical Transcriptionists* (1244)

1451 Library Clerks

Library clerks issue and receive library materials, sort and shelve books and provide general library information to users. They also perform clerical functions. Library clerks are employed by libraries or other establishments with library services.

Example titles

circulation clerk – library
interlibrary loan clerk
library clerk
library page

periodicals clerk
reference clerk
shelving clerk – library

Main duties

Library clerks perform some or all of the following duties:

- Issue and receive library books and other materials
- Reshelf books and other library materials
- Perform clerical activities such as manual and electronic filing, word processing and occasional typing
- Maintain journal subscriptions
- Assist library users in accessing basic library materials and making interlibrary loans.

Employment requirements

- Completion of secondary school is usually required.

Additional information

- Progression to more senior positions is possible with experience and post-secondary education related to library science.

Classified elsewhere

- *Librarians* (5111)
- *Library technicians* (in 5211 *Library and Archive Technicians and Assistants*)
- *Supervisors, Library, Correspondence and Related Information Clerks* (1213)

1452 Correspondence, Publication and Related Clerks

Clerks in this unit group write correspondence, proofread material for accuracy, compile material for publication and perform other related clerical duties. They are employed by newspapers, periodicals, publishing firms and by establishments throughout the private and public sectors.

Example titles

advertising clerk
classified advertising clerk
correspondence clerk
directory compiler
editorial assistant

press clipper
proofreader
publication clerk
reader
translation clerk

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Classified advertising clerks receive customers' orders for classified advertising, write and edit copy, calculate advertising rates and bill customers.
- Correspondence clerks write business and government correspondence such as replies to requests for information and assistance, damage claims, credit and billing enquiries and service complaints.
- Editorial assistants and publication clerks assist in the preparation of periodicals, advertisements, catalogues, directories and other material for publication; proofread material; verify facts and conduct research.
- Proofreaders read material prior to publication to detect and mark for correction any grammatical, typographical or compositional errors within tight deadlines.
- Readers and press clippers read newspapers, magazines, press releases and other publications to locate and file articles of interest to staff and clients.

Employment requirements

- Completion of secondary school is required.
- Additional courses or a diploma in writing, journalism or a related field may be required.
- Previous clerical or administrative experience may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Professional Occupations in Public Relations and Communications (5124)*
- Supervisors, Library, Correspondence and Related Information Clerks (1213)*

1453 Customer Service, Information and Related Clerks

This unit group includes clerks who answer enquiries and provide information regarding an establishment's goods, services and policies and who provide customer services such as receiving payments and processing requests for services. They are employed by retail establishments, call centres, insurance, telephone and utility companies and other establishments throughout the private and public sectors.

Example titles

accounts information clerk	enquiries clerk
bus information clerk	hospital information clerk
call centre agent – customer service	information clerk – customer service
complaints clerk – customer service	lost-and-found clerk
counter enquiries clerk	order desk agent
courtesy desk clerk	public relations clerk
customer service clerk	tourist information clerk
customer service representative – call centre	

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Customer service clerks in retail establishments answer, in person or on the phone, enquiries from customers and investigate complaints regarding the establishment's goods, services and policies; arrange for refunds, exchange and credit for returned merchandise; receive account payments; and receive credit and employment applications.
- Call centre agents take customer orders for goods or services; promote goods or services; respond to enquiries and emergencies; investigate complaints and update accounts.
- Customer service clerks in insurance, telephone, utility and similar companies explain the type and cost of services offered; order services; provide information about claims or accounts; update accounts; initiate billing and process claim payments; and receive payment for services.
- Information clerks provide information to customers and the public concerning goods, services, schedules, rates, regulations and policies in response to telephone and in-person enquiries.

Employment requirements

- Completion of secondary school is usually required.
- Completion of some college or other post-secondary programs may be required.
- Clerical or sales experience may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Correspondence, Publication and Related Clerks* (1452)
- Customer service representatives in banks and other financial institutions (in 1433 *Customer Service Representatives – Financial Services*)
- General ticket and information agents (in 6433 *Airline Sales and Service Agents*)
- *Receptionists and Switchboard Operators* (1414)
- *Retail Salespersons and Sales Clerks* (6421)
- *Supervisors, Library, Correspondence and Related Information Clerks* (1213)
- Ticket and information clerks (except airline) (in 6434 *Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)*)

1454 Survey Interviewers and Statistical Clerks

Survey interviewers contact individuals to gather information for market research, public opinion polls or election and census enumeration. Statistical clerks code and compile interview and other data into reports, lists, directories and other documents. Workers in this unit group are employed by market research and polling firms, government departments and agencies, utility companies and other establishments. This unit group also includes clerks who observe and record information on traffic flow.

Example titles

census enumerator
coding clerk – statistics
election enumerator
interview clerk
poll clerk

public opinion interviewer
statistical clerk
survey interviewer
telephone survey clerk

Main duties

Survey interviewers perform some or all of the following duties:

- Contact individuals by telephone or in person and explain the purpose of the interview
- Ask questions following the outlines of questionnaires and surveys
- Record responses on paper or enter responses directly into a computer database through computer-assisted interviewing systems.

Statistical clerks perform some or all of the following duties:

- Check information gathered for completeness and accuracy
- Code information according to established coding manuals and enter data onto computers
- Conduct routine statistical analysis of data
- Compile interview and other data into reports and lists.

Employment requirements

- Completion of secondary school may be required.
- Experience in the operation of a computer may be required.
- On-the-job training is usually provided.
- May require driver's licence.

Classified elsewhere

- *Correspondence, Publication and Related Clerks* (1452)
- *Customer Service, Information and Related Clerks* (1453)
- *Telemarketers* (in 6623 *Other Elemental Sales Occupations*)

1461 Mail, Postal and Related Clerks

This unit group includes clerks who process and sort mail and parcels in post offices, mail processing plants and internal mail rooms, and clerks who serve customers and record transactions at sales counters and postal wickets. Mail, postal and related clerks are employed by Canada Post Corporation, courier and parcel express companies and establishments throughout the public and private sectors.

Example titles

bus parcel express clerk
express mail service clerk
mail clerk
mail room clerk
mail sorter

postal clerk
postal counter clerk
postal wicket clerk
railway mail clerk

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Postal clerks calculate and affix the correct postage on letters, parcels and registered mail and receive payment from customers; sell stamps, prepaid mail and courier envelopes and money orders; route mail to the proper delivery stream; sign or obtain signatures from recipients for registered or special delivery mail and keep records; answer inquiries and complete forms regarding change of address, theft or loss of mail; and record and balance daily transactions.
- Mail sorters sort mail according to destination; bundle, label, bag and route sorted mail to the proper delivery stream; and search directories to find the correct address for redirected mail.
- Mail room clerks receive, process, sort and distribute incoming and outgoing mail, faxes, messages and courier packages manually or electronically; maintain address databases and produce personalized mailings; print and photocopy material, address and stuff envelopes; weigh outgoing mail, calculate and affix proper postage and bundle by postal code; and may operate and maintain print shop and mailing house equipment.

Employment requirements

- Completion of secondary school and some college office administration courses may be required.

Additional information

- Progression to supervisory or facility management positions is possible with additional training or experience.

Classified elsewhere

- *Couriers, Messengers and Door-to-Door Distributors* (1463)
- *Letter Carriers* (1462)
- *Supervisors, Mail and Message Distribution Occupations* (1214)

1462 Letter Carriers

Letter carriers sort and deliver mail, record delivery of registered mail and collect money for cash-on-delivery parcels. Letter carriers are employed by Canada Post Corporation.

Example titles

letter carrier
mail carrier

rural mail carrier

Main duties

Letter carriers perform some or all of the following duties:

- Organize mail by address and load into mailbag
- Deliver letters, small parcels and other printed matter along established routes
- Deliver telegrams, special delivery and express mail
- Collect payment for cash-on-delivery service
- Record delivery of registered mail
- Leave notices that items could not be delivered and the location where they can be picked up
- Return undeliverable mail to postal station.

Employment requirements

- Some secondary school education is required.
- Two weeks to one month of training is provided by Canada Post Corporation.

Additional information

- Progression to supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Couriers, Messengers and Door-to-Door Distributors* (1463)
- Letter carrier supervisors (in *1214 Supervisors, Mail and Message Distribution Occupations*)
- *Mail, Postal and Related Clerks* (1461)

1463 Couriers, Messengers and Door-to-Door Distributors

Couriers, messengers and door-to-door distributors pick up and deliver letters, parcels, packages, newspapers, flyers and other items within and between establishments. They are employed by courier service companies and other establishments throughout the private and public sectors.

Example titles

bank messenger

courier

delivery person – courier service

door-to-door distributor

flyer distributor

messenger

newspaper carrier

runner

Main duties

Couriers, messengers and door-to-door distributors perform some or all of the following duties:

- Pick up messages, letters, envelopes, parcels, airline tickets, legal documents, packages, bonds, cheques, securities and other items from customers, and hand-deliver them to addresses within an establishment or in other establishments by walking or cycling within prescribed time periods
- Collect payment for items delivered
- Keep record of items received and delivered using delivery information acquisition devices
- Deliver newspapers, flyers, handbills, telephone directories and similar items to residences and businesses.

Employment requirements

- Secondary school education may be required.
- Eligibility for bonding may be required.
- Ability to navigate streets and follow directions is usually required.
- Physical fitness is required for some occupations in this unit group.

Additional information

- There is some mobility into other delivery occupations such as delivery drivers.
- There may be mobility to clerical occupations within the company.
- Progression to supervisory positions may be possible with experience.

Classified elsewhere

- *Delivery and Courier Service Drivers* (7414)
- *Letter Carriers* (1462)
- *Supervisors, Mail and Message Distribution Occupations* (1214)

1471 Shippers and Receivers

Shippers and receivers ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from an establishment. They are employed in the public sector and by retail and wholesale establishments, manufacturing companies, and other commercial and industrial establishments.

Example titles

freight receiver
freight shipper
import freight clerk
receiver

shipper
shipper-receiver
shipping agent
shipping and receiving clerk

Main duties

Shippers and receivers perform some or all of the following duties:

- Determine method of shipment and arrange shipping; prepare bills of lading, customs forms, invoices and other shipping documents manually or by computer
- Assemble containers and crates, record contents manually or in computer system, pack goods to be shipped and affix identifying information and shipping instructions
- Oversee loading and unloading of goods from trucks or other conveyances
- Inspect and verify incoming goods against invoices or other documents, record shortages and reject damaged goods
- Unpack, code and route goods to appropriate storage areas
- Maintain internal, manual or computerized record-keeping systems
- May operate forklift, hand truck or other equipment to load, unload, transport and store goods.

Employment requirements

- Completion of secondary school is usually required.
- Experience in a related clerical occupation or as a warehouse worker may be required.
- Forklift certificate may be required.
- Driver's licence may be required.

Additional information

- Progression to supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Material Handlers* (7452)
- *Purchasing and Inventory Clerks* (1474)
- *Storekeepers and Parts Clerks* (1472)

1472 Storekeepers and Parts Clerks

Storekeepers and parts clerks sort, store and issue parts and supplies for use by the establishment in which they work and for sale to the public. They are employed by manufacturing companies, warehouses, retail and wholesale establishments, mining, forestry and construction companies, repair shops, hospitals and other establishments, and the armed forces.

Example titles

ammunition storekeeper
automotive partsperson – retail
material keeper
medical supply clerk
motor vehicle parts clerk
parts clerk

partsperson
parts supplier
ship storeman/woman
storekeeper
tool room attendant

Main duties

Storekeepers and parts clerks perform some or all of the following duties:

- Receive and sort incoming parts and supplies
- Store items in an orderly and accessible manner in a warehouse, tool room, supply room or other area
- Process incoming requisitions and issue or distribute parts and supplies for internal usage
- Maintain records of orders and the amount, kind and location of parts and supplies on hand using manual or computerized inventory system
- Prepare requisition orders to replenish parts and supplies
- Sell spare and replacement parts for motor vehicles, machinery and equipment in a retail setting
- Advise retail customers or internal users on appropriateness of parts, supplies or materials requested.

Parts clerks may specialize in a particular line of parts such as automotive parts, recreational vehicle parts, marine parts, heavy equipment parts, agricultural machinery parts, heating, ventilating and air conditioning parts or refrigeration parts.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three-year apprenticeship program
or
Completion of specialized training in high school and a one-year college program for parts clerks may be required.

- Trade certification for partspersons is available, but voluntary, in all provinces and territories except Ontario.
- Trade certification for industrial engines and equipment partspersons is available, but voluntary, in British Columbia.
- For parts clerks, experience in a related clerical occupation or as a warehouse worker may be required.
- Interprovincial trade certification (Red Seal) is also available to qualified partspersons.

Additional information

- Progression to supervisory positions is possible with additional training or experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Parts clerks supervisors (in 1215 *Supervisors, Recording, Distributing and Scheduling Occupations*)
- *Purchasing and Inventory Clerks* (1474)
- *Shippers and Receivers* (1471)

1473 Production Clerks

Production clerks co-ordinate and expedite the flow of work and materials within an establishment, prepare work and production schedules and monitor the progress of production and construction projects. Production clerks are employed by manufacturing and construction companies, printing and publishing companies and other industrial establishments.

Example titles

expeditor
material estimator
production clerk
production co-ordinator

production scheduler
scheduling clerk
traffic control clerk

Main duties

Production clerks perform some or all of the following duties:

- Compile detailed worksheets and specifications from customer's order
- Estimate type and quantity of materials and labour required for production, construction and other projects
- Consult with production supervisor to schedule production runs in a cost and time-efficient manner
- Meet regularly with other production clerks, warehouse, production and construction supervisors and purchasing and inventory clerks to co-ordinate activities between warehouses and production floors or construction sites
- Co-ordinate and monitor the movement of parts, supplies and materials within an establishment and ensure that supplies, materials and products are shipped and received on schedule
- Prepare and maintain various reports on the progress of work, materials used, rates of production and other production information, using manual or computerized systems.

Employment requirements

- Completion of secondary school is usually required and college may be required.
- Previous clerical experience or experience as a production worker may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Purchasing and Inventory Clerks* (1474)
- *Shippers and Receivers* (1471)
- *Storekeepers and Parts Clerks* (1472)

1474 Purchasing and Inventory Clerks

Purchasing and inventory clerks process purchasing transactions and maintain inventories of materials, equipment and stock. They are employed by retail and wholesale establishments, manufacturing companies, government agencies and other establishments.

Example titles

inventory analyst
inventory clerk
inventory control clerk
inventory planner

procurement clerk
purchasing clerk
purchasing clerk assistant

Main duties

Purchasing clerks perform some or all of the following duties:

- Review requisition orders for accuracy and verify that materials, equipment and stock are not available from current inventories
- Source and obtain price quotations from catalogues and suppliers and prepare purchase orders
- Calculate cost of orders and charge or forward invoices to appropriate accounts
- Process purchases within purchasing authority
- Contact suppliers to schedule deliveries and to resolve shortages, missed deliveries and other problems
- Prepare and maintain purchasing files, reports and price lists.

Inventory clerks perform some or all of the following duties:

- Monitor inventory levels as materials, equipment and stock are issued, transferred within an establishment or sold to the public using manual or computerized inventory systems
- Compile inventory reports, recording the quantity, type and value of materials, equipment and stock on hand, using manual or computerized inventory systems
- Prepare requisition orders to replenish materials, equipment and stock
- Maintain stock rotation and dispose of and account for outdated stock
- Enter data for production scheduling, stock replenishment/relocation and inventory adjustments
- Reconcile physical inventories with computer counts.

Employment requirements

- Completion of secondary school is usually required.
- Courses in purchasing management may be required for purchasing clerks.
- Courses in production and inventory management and ability to operate a computerized inventory system may be required for inventory clerks.

Additional information

- The duties of purchasing and inventory clerks may overlap in some establishments.
- Progression to supervisory positions or more senior occupations such as purchasing agent or retail buyer is possible with additional training or experience.

Classified elsewhere

- *Purchasing Agents and Officers* (1225)
- *Retail and Wholesale Buyers* (6233)
- *Storekeepers and Parts Clerks* (1472)
- Supervisors of purchasing and inventory clerks (in *1215 Supervisors, Recording, Distributing and Scheduling Occupations*)

1475 Dispatchers and Radio Operators

Dispatchers operate radios and other telecommunication equipment to dispatch emergency vehicles and to co-ordinate the activities of drivers and other personnel. They are employed by police, fire and health departments, other emergency service agencies, taxi, delivery and courier services, trucking and utilities companies, and other commercial and industrial establishments. Radio operators receive, transmit and record signals and messages using radios and other telecommunication equipment. They are employed by transportation companies, mining, forestry and other industrial establishments, and the armed forces.

Example titles

911 dispatcher	radio operator
alarm system dispatcher	radio operator – military
ambulance dispatcher	taxi dispatcher
emergency vehicle dispatcher	tow truck dispatcher
inbound/outbound freight co-ordinator	truck dispatcher
mobile equipment dispatcher	utilities maintenance crew dispatcher

Main duties

Dispatchers perform some or all of the following duties:

- Receive requests for emergency assistance or service and contact ambulances, police and fire departments, tow-trucks, and utility crews
- Process and transmit information and instructions to co-ordinate the activities of vehicle operators, crews and equipment using a variety of computer-aided communications and dispatching equipment
- Dispatch personnel according to written schedules and work orders, or as required by emergency situations
- Advise vehicle operators of route and traffic problems such as construction, accidents, congestion, weather conditions, weight and size restrictions and other information
- Monitor personnel workloads and locations
- Maintain operator work records using computerized or manual methods and ensure time sheets and payroll summaries are completed accurately
- Maintain computer and manual records of mileage, fuel use, repairs and other expenses, and generate reports.

Radio operators perform some or all of the following duties:

- Operate radio equipment to communicate with ships, aircraft, mining crews, offshore oil rigs, logging camps and other remote operations

- Operate and assist in the maintenance of fixed, air transportable, mobile and naval communications equipment in the Canadian armed forces.

Employment requirements

- Completion of secondary school is required.
- Police and emergency dispatchers are required to complete formal on-the-job training. Other dispatchers usually undergo some informal on-the-job training.
- Radio operators and police and emergency dispatchers usually require provincial radio operator's certificates.

Classified elsewhere

- *Air Traffic Control and Related Occupations* (2272)
- Bus dispatchers (in 7222 *Supervisors, Motor Transport and Other Ground Transit Operators*)
- *Railway Traffic Controllers and Marine Traffic Regulators* (2275)
- Supervisors of dispatchers (in 1215 *Supervisors, Recording, Distributing and Scheduling Occupations*)

1476 Transportation Route and Crew Schedulers

Transportation route and crew schedulers prepare operational and crew schedules for transportation equipment and operating personnel. They are employed by municipal transit commissions, truck, delivery and courier companies, railways, airlines and by other transportation establishments in both the private and public sectors.

Example titles

bus scheduler

crew scheduler, transportation

flight crew scheduler

schedule analyst

schedule writer, transportation

train scheduler

transit scheduler

truck scheduler

Main duties

Transportation route and crew schedulers perform some or all of the following duties:

- Review schedule requisitions, passenger counts and cargo, running times, distances, personnel availability and other pertinent information to establish schedule parameters
- Design new or modify existing schedules using computer software or other methods
- Incorporate into route plan factors such as peak travel periods, holidays, special events and construction with emphasis on time and cost efficiency
- Assign personnel to equipment and routes and schedule work shifts
- Compile equipment and personnel records, including hours in service, distances, maintenance, repairs required and other data, to produce operating reports
- May prepare user guides and other public service information.

Employment requirements

- Completion of secondary school is required.
- Several years of experience in an appropriate transportation sector are usually required.
- On-the-job training may be provided.

Additional information

- Mobility between occupations in this group is limited due to the requirement of specific transportation sector experience.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Flight schedulers managers (in 0713 *Transportation Managers*)
- Production schedulers in manufacturing establishments (in 1473 *Production Clerks*)
- Scheduling technicians in manufacturing (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- Supervisors of transportation route and crew schedulers (in 1215 *Supervisors, Recording, Distributing and Scheduling Occupations*)

NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS

Major Group 21

PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES

211 Physical Science Professionals

- 2111 Physicists and Astronomers
- 2112 Chemists
- 2113 Geologists, Geochemists and Geophysicists
- 2114 Meteorologists
- 2115 Other Professional Occupations in Physical Sciences

212 Life Science Professionals

- 2121 Biologists and Related Scientists
- 2122 Forestry Professionals
- 2123 Agricultural Representatives, Consultants and Specialists

213 Civil, Mechanical, Electrical and Chemical Engineers

- 2131 Civil Engineers
- 2132 Mechanical Engineers
- 2133 Electrical and Electronics Engineers
- 2134 Chemical Engineers

214 Other Engineers

- 2141 Industrial and Manufacturing Engineers
- 2142 Metallurgical and Materials Engineers
- 2143 Mining Engineers
- 2144 Geological Engineers
- 2145 Petroleum Engineers
- 2146 Aerospace Engineers
- 2147 Computer Engineers (Except Software Engineers and Designers)
- 2148 Other Professional Engineers, n.e.c.

215 Architects, Urban Planners and Land Surveyors

- 2151 Architects
- 2152 Landscape Architects
- 2153 Urban and Land Use Planners
- 2154 Land Surveyors

216 Mathematicians, Statisticians and Actuaries

- 2161 Mathematicians, Statisticians and Actuaries

217 Computer and Information Systems Professionals

- 2171 Information Systems Analysts and Consultants
- 2172 Database Analysts and Data Administrators
- 2173 Software Engineers and Designers
- 2174 Computer Programmers and Interactive Media Developers
- 2175 Web Designers and Developers

Major Group 22

TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES**221 Technical Occupations in Physical Sciences**

- 2211 Chemical Technologists and Technicians
- 2212 Geological and Mineral Technologists and Technicians
- 2213 Meteorological Technicians

222 Technical Occupations in Life Sciences

- 2221 Biological Technologists and Technicians
- 2222 Agricultural and Fish Products Inspectors
- 2223 Forestry Technologists and Technicians
- 2224 Conservation and Fishery Officers
- 2225 Landscape and Horticulture Technicians and Specialists

223 Technical Occupations in Civil, Mechanical and Industrial Engineering

- 2231 Civil Engineering Technologists and Technicians
- 2232 Mechanical Engineering Technologists and Technicians
- 2233 Industrial Engineering and Manufacturing Technologists and Technicians
- 2234 Construction Estimators

224 Technical Occupations in Electronics and Electrical Engineering

- 2241 Electrical and Electronics Engineering Technologists and Technicians
- 2242 Electronic Service Technicians (Household and Business Equipment)
- 2243 Industrial Instrument Technicians and Mechanics
- 2244 Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors

225 Technical Occupations in Architecture, Drafting, Surveying and Mapping

- 2251 Architectural Technologists and Technicians
- 2252 Industrial Designers
- 2253 Drafting Technologists and Technicians
- 2254 Land Survey Technologists and Technicians
- 2255 Mapping and Related Technologists and Technicians

226 Other Technical Inspectors and Regulatory Officers

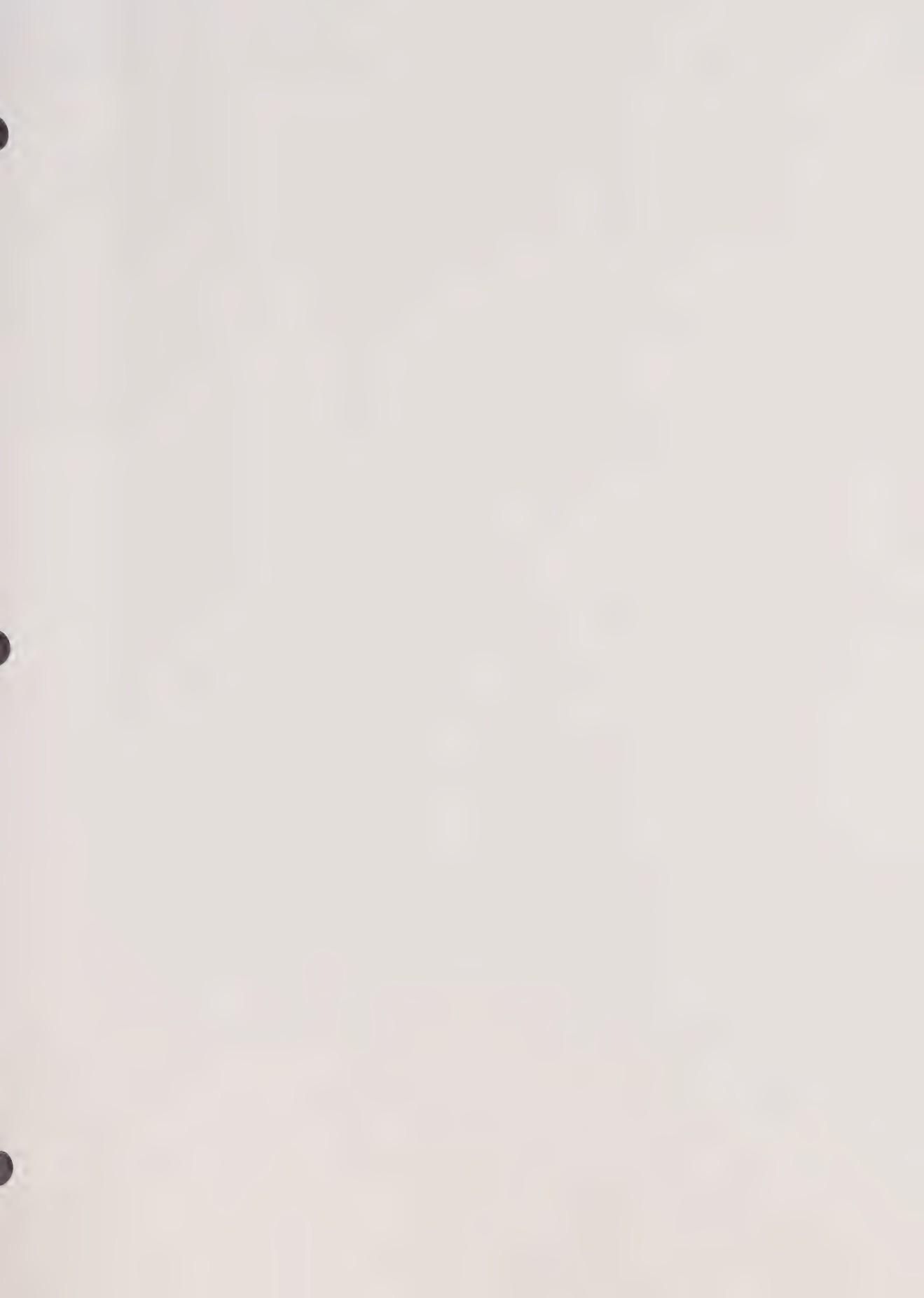
- 2261 Non-Destructive Testers and Inspectors
- 2262 Engineering Inspectors and Regulatory Officers
- 2263 Inspectors in Public and Environmental Health and Occupational Health and Safety
- 2264 Construction Inspectors

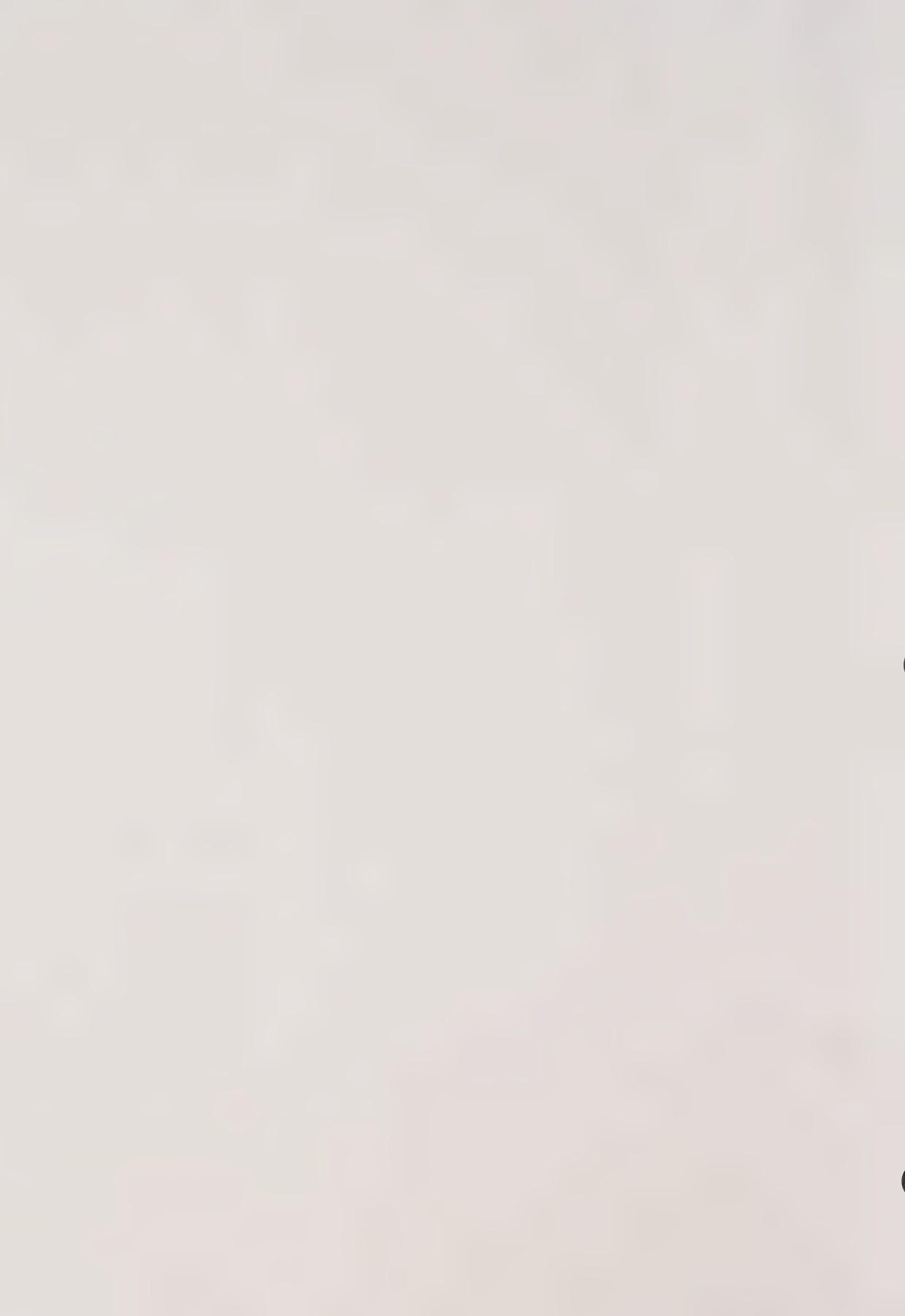
227 Transportation Officers and Controllers

- 2271 Air Pilots, Flight Engineers and Flying Instructors
- 2272 Air Traffic Control and Related Occupations
- 2273 Deck Officers, Water Transport
- 2274 Engineer Officers, Water Transport
- 2275 Railway Traffic Controllers and Marine Traffic Regulators

228 Technical Occupations in Computer and Information Systems

- 2281 Computer Network Technicians
- 2282 User Support Technicians
- 2283 Systems Testing Technicians





2111 Physicists and Astronomers

Physicists conduct theoretical and applied research to extend knowledge of natural phenomena and to develop new processes and devices in fields such as electronics, communications, power generation and distribution, aerodynamics, optics and lasers, remote sensing, and medicine and health. They are employed by electronic, electrical and aerospace manufacturing companies, telecommunications companies, power utilities, university and government research laboratories, hospitals and by a wide range of other processing, manufacturing, and research and consulting firms. Astronomers conduct observational and theoretical research to extend knowledge of the universe. They are employed by government and universities.

Example titles

acoustics physicist
aerodynamicist
astronomer
astrophysicist
biophysicist
cosmologist
experimental physicist
health physicist
medical physicist
metrologist

nuclear physicist
optics physicist
plasma physicist
radio astronomer
research scientist, aerospace
research scientist, electronics
research scientist, physics
research scientist, remote sensing
solid-state physicist

Main duties

Physicists perform some or all of the following duties:

- Design and conduct research in experimental and theoretical physics
- Carry out analysis of research data and prepare research reports
- Participate as a member of a research or development team in the design and development of experimental, industrial or medical equipment, instrumentation and procedures.

Physicists may specialize in fields such as aeronomy and space, acoustics, atomic and molecular physics, biophysics, condensed matter or solid state physics, electromagnetics, fluids and aerodynamics, health physics, medical physics, metrology, particle physics, optics and laser physics, nuclear physics and plasma physics.

Astronomers perform some or all of the following duties:

- Design and conduct observational surveys, conduct detailed analyses and develop numerical models to extend knowledge of celestial bodies and cosmic radiation
- Develop or participate in the development of instrumentation and software for astronomical observation and analysis.

Astronomers may specialize in fields such as astrophysics, observational or optical astronomy and radio astronomy.

Employment requirements

- Physicists usually require a master's or doctoral degree in a field of physics, engineering physics, or in a related discipline.
- Astronomers usually require a master's or doctoral degree in astronomy or in a related discipline.

Additional information

- Mobility between specializations within physics and within astronomy is possible with experience.
- Physicists may work closely with and perform some of the duties of engineers.
- Mobility is possible to the fields of meteorology, geophysics and other fields of science.

Classified elsewhere

- Atmospheric physicists (in 2114 Meteorologists)
- Computer Engineers (Except Software Engineers and Designers) (2147)
- Geophysicists and physical oceanographers (in 2113 Geologists, Geochemists and Geophysicists)

2112 Chemists

Chemists conduct research and analysis in support of industrial operations, product and process development, quality control, environmental control, medical diagnosis and treatment, biotechnology and other applications. They also conduct theoretical, experimental and applied research into basic chemical and biochemical processes to create or synthesize new products and processes. Chemists are employed in research, development and quality control laboratories; chemical, petrochemical and pharmaceutical industries; mineral, metal and pulp and paper industries; and a wide variety of manufacturing, utility, health, educational and government establishments.

Example titles

agricultural chemist
analytical chemist
bioanalytical chemist
biochemist
chemist
clinical chemist
coatings chemist
electrochemist
environmental chemist
food chemist
inorganic chemist
medicinal chemist
nuclear magnetic resonance (NMR) spectroscopist

oceanographic chemist
organic chemist
organic mass spectrometrist
organometallic chemist
pharmacological chemist
physical chemist
polymer chemist
quality control chemist
research chemist
soil chemist
textile chemist
theoretical chemist

Main duties

Chemists perform some or all of the following duties:

- Analyze, synthesize, purify, modify and characterize chemical or biochemical compounds
- Develop and conduct programs of analysis to ensure quality control of raw materials, chemical intermediates or final products
- Conduct programs of sample and data collection and analysis to identify and quantify environmental toxicants
- Conduct research to develop new chemical formulations and processes and devise new technical applications of industrial chemicals and compounds
- Conduct research to discover, develop and refine, and evaluate new products
- Conduct fundamental and applied research into the synthesis and properties of chemical compounds and the mechanisms of chemical reactions
- Investigate chemical aspects of the mechanisms of drug action, the diagnosis and treatment of disease, organ function and the assessment of health

- Participate in interdisciplinary research and development projects working with chemical engineers, biologists, microbiologists, agronomists, geologists or other professionals
- Act as technical consultant in a particular field of expertise
- May participate in the commercialization of new products
- May supervise other chemists and chemical technicians and technologists.

Employment requirements

- A bachelor's degree in chemistry, biochemistry or a related discipline is required.
- A master's or doctoral degree is usually required for employment as a research chemist.
- Licensing by a provincial association of chemists is compulsory in Quebec, and available but voluntary in Ontario and Alberta.

Additional information

- Mobility between occupations in this group is possible with experience.
- Mobility is possible to occupations concerned with plant management, technical sales and the development and management of regulatory programs and teaching professions.

2112 Chemists

Classified elsewhere

- *Chemical Engineers* (2134)
- *Geochemists* (in 2113 *Geologists, Geochemists and Geophysicists*)
- Metallurgists and material scientists (in 2115 *Other Professional Occupations in Physical Sciences*)
- Molecular biologists (in 2121 *Biologists and Related Scientists*)

2113 Geologists, Geochemists and Geophysicists

Geologists, geochemists and geophysicists conduct programs of exploration and research to extend knowledge of the structure, composition and processes of the earth, to locate and identify hydrocarbon, mineral and groundwater resources, to plan and implement programs of hydrocarbon and mineral extraction and to assess and mitigate the effects of development and waste disposal projects on the environment. They are employed by petroleum and mining companies, consulting geology, geophysics and engineering firms and by governments and educational institutions or they may be self-employed.

Example titles

development geologist
environmental geologist
exploration geologist
geochemist
geologist
geophysicist
glaciologist
groundwater geologist
hydrogeologist
hydrologist

mine geologist
mineralogist
oceanographer
paleontologist
petroleum geologist
petrologist
sedimentologist
seismologist
stratigrapher

Main duties

Geologists, geochemists and geophysicists perform some or all of the following duties:

- Conduct theoretical and applied research to extend knowledge of surface and subsurface features of the earth, its history and the operation of physical, chemical and biological systems that control its evolution
- Plan, direct and participate in geological, geochemical and geophysical field studies, drilling and geological testing programs
- Plan, direct and participate in seismic, electromagnetic, magnetic, gravimetric, radiometric, radar and other remote sensing programs
- Plan, direct and participate in the analysis of geological, geochemical and geophysical survey data, well logs and other test results, maps, notes and cross sections
- Develop applied software for the analysis and interpretation of data
- Plan, direct and participate in the analysis of core samples, drill cuttings and rock samples to identify chemical, mineral, hydrocarbon and biological composition and to assess depositional environments and geological age
- Assess the size, orientation and composition of mineral ore bodies and hydrocarbon deposits
- Identify deposits of construction materials and determine their characteristics and suitability for use as concrete aggregates, road fill or for other applications
- Assess the movement of ground and surface waters and advise in areas such as waste management, route and site selection and the restoration of contaminated sites
- Recommend the acquisition of lands, exploration and mapping programs and mine development
- Conduct geological and geophysical studies for regional development, site selection and the development of public works projects
- Identify and anticipate natural risks such as slope erosion, landslides, soil instability, subsidence, earthquakes and volcanic eruptions
- May supervise and co-ordinate well drilling, completion and work-overs and mining activities.

Geologists may specialize in the following fields: coal geology, environmental geology, geochronology, geomorphology or surficial geology, geotechnics, hydrogeology, marine geology, mineral deposits or mining, mineralogy, paleontology, petroleum geology, petrology, sedimentology, stratigraphy or biostratigraphy, structural geology or tectonics, volcanology or in other fields.

Geochemists may specialize in analytical geochemistry, hydrogeochemistry, mineral or petroleum geochemistry or in other fields.

2113 Geologists, Geochemists and Geophysicists

Geophysicists may specialize in earth physics, oceanography, petroleum or in other fields.

Employment requirements

- A university degree in geology, geochemistry, geophysics or a related discipline is required.
- A master's or doctoral degree in geophysics, physics, mathematics or engineering may be required for employment as a geophysicist.
- Registration as a professional geologist or professional geophysicist by a provincial or territorial association of professional engineers or geologists and geophysicists is often required for employment and to practice in Newfoundland and Labrador, Alberta, British Columbia, Nunavut and the Northwest Territories.
- Geologists and geophysicists are eligible for registration following graduation from an accredited educational program and after several years of supervised work experience and, in some provinces, after passing a professional practice examination.
- In some provinces or territories those who are not graduates of an accredited educational program are eligible for registration after completing a six- to eight-year term of supervised employment and successfully passing examinations.
- Supervisory and senior positions in this unit group require experience.

Additional information

- Mobility between specializations in this group is possible with experience.
- Advancement is possible to management positions in mining, petroleum and other industries.

Classified elsewhere

- *Chemists* (2112)
- *Geological Engineers* (2144)
- *Physicists and Astronomers* (2111)

2114 Meteorologists

Meteorologists analyze and forecast weather, provide consultation on atmospheric phenomena and conduct research into the processes and phenomena of weather, climate and atmosphere. They are employed by Environment Canada as well as by the military, private consulting companies, resource and utility companies and by provincial governments or they may be self-employed.

Example titles

air quality meteorologist
atmospheric physicist
climatologist

hydrometeorologist
meteorologist
weather forecaster

Main duties

Meteorologists perform some or all of the following duties:

- Analyze and interpret data obtained from meteorological stations, radar and satellite imagery and computer model output
- Produce weather forecasts and provide weather consulting services for industries such as aviation, marine, agriculture and tourism, and to the general public
- Disseminate weather forecasts and reports to the general public through a variety of media including radio, television, print and the internet
- Conduct research and provide consultation on the processes and determinants of atmospheric phenomena, weather and climate, atmospheric dispersion, and physical and chemical transformation of pollutants
- Develop and test mathematical computer models of weather and climate for experimental or operational use
- Analyze the impact of industrial projects and human activity on the climate and quality of the air and work with the social science, engineering and economic communities to develop appropriate mitigation strategies
- Participate in studies of the effect of weather on the environment
- Provide consultation and advice to outside agencies, professionals, or researchers regarding the use and interpretation of climatological information
- Make scientific presentations, publish reports, articles or popular texts for specialists, users or the general public
- May engage in the design and development of new equipment and procedures for meteorological data collection, remote sensing, or for related applications.

Employment requirements

- A bachelor's or master's degree in meteorology, physics, mathematics or in a related field is required.
- A doctoral degree is usually required for employment as a research scientist in meteorology.
- Formal training of nine months is provided by Environment Canada for operational meteorologists.
- Membership in the Canadian Meteorological and Oceanographic Society or, in Quebec, in l'Association professionnelle des météorologues du Québec is available, but voluntary, for qualified meteorologists.

Classified elsewhere

- Announcers who broadcast weather forecasts (in 5231 *Announcers and Other Broadcasters*)
- *Meteorological Technicians* (2213)

2115 Other Professional Occupations in Physical Sciences

This group includes metallurgists, soil scientists and physical science occupations which are not elsewhere classified, and involve the conduct of theoretical and applied research in fields of physical science. They are employed by governments, educational institutions and a wide range of industrial establishments.

Example titles

ballistics examiner

materials scientist

metallurgist

physical metallurgist

research scientist – ceramics

research scientist – composite materials

soil scientist

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Metallurgists conduct studies into the properties and production of metals and alloys.
- Soil scientists conduct research into the composition, distribution and evolution of soils.
- Materials scientists conduct research into the properties, composition and production of materials such as ceramics and composite materials.

Employment requirements

- A bachelor's degree in metallurgy, physics, chemistry, or a related physical science discipline is required.
- A master's or doctoral degree is usually required for employment as a research scientist.

Additional information

- Mobility between specializations in this group may be possible with experience.
- Mobility is possible to other fields of physical science or to management or regulatory program management with experience.

Classified elsewhere

- *Chemists* (2112)
- *Metallurgical and Materials Engineers* (2142)

2121 Biologists and Related Scientists

Biologists and related scientists conduct basic and applied research to extend knowledge of living organisms, to manage natural resources, and to develop new practices and products related to medicine and agriculture. They are employed in both laboratory and field settings by governments, environmental consulting companies, resource and utilities companies, chemical, pharmaceutical and biotechnical companies and health and educational institutions.

Example titles

anatomist
bacteriologist
bioinformatician
biologist
botanist
cell biologist
ecologist
embryologist
geneticist
histologist
immunologist

marine biologist
microbiologist
molecular biologist
parasitologist
pharmacologist
physiologist
protozoologist
toxicologist
virologist
zoologist

Main duties

Biologists perform some or all of the following duties:

- Plan and conduct studies of the environment, and of the population, distribution, structure and functional characteristics and behaviour of plants and animals
- Conduct ecological and environmental impact studies and prepare reports
- Study, identify and classify plant and animal specimens
- Conduct experiments in plant or animal growth, heredity and breeding
- Prepare reports and plans for management of renewable resources
- May supervise biological technologists and technicians and other scientists.

Microbiologists and cell and molecular biologists perform some or all of the following duties:

- Conduct research into the structure, function, ecology, biotechnology and genetics of micro-organisms, including bacteria, fungi, protozoans, and algae
- Conduct research into the structure and functioning of human, animal and plant tissues and cells
- Conduct studies into the identification, effects and control of human, plant and animal pathogens and toxins

- Conduct clinical or laboratory studies to test, evaluate and screen drugs and pharmaceuticals
- Conduct molecular or biochemical studies and experiments into genetic expression, gene manipulation and recombinant DNA technology
- Conduct research to discover, develop and refine, and evaluate new products
- May participate in the commercialization of new products
- May supervise biological technologists and technicians and other scientists
- May conduct biostatistical data analysis using computer modelling techniques.

Biologists and related scientists may specialize at the macroscopic level, in fields such as botany, zoology, ecology and marine biology or, at the cellular and molecular level, in fields such as genetics, immunology, pharmacology, toxicology, physiology, pathology, bacteriology and virology.

Employment requirements

- A bachelor's degree in biology or in a related discipline is required for biologists.
- A master's or doctoral degree in biology or a related discipline is required for employment as a research scientist in biology.
- Post-doctoral research experience is usually required before employment in academic departments or research institutions.

2121 Biologists and Related Scientists

Classified elsewhere

- Biochemists (in 2112 *Chemists*)
- Specialists in laboratory medicine (in 3111 *Specialist Physicians*)

2122 Forestry Professionals

Forestry professionals conduct research, develop plans and administer and direct programs related to the management and harvesting of forest resources. They are employed by the forest industry, provincial and federal governments, consulting companies, educational institutions and other industries, or they may be self-employed.

Example titles

appraisal forester
consulting forester
district forester
forest engineer
forester

forestry superintendent
professional forester
regional inventory officer – forestry
registered professional forester (RPF)

Main duties

Forestry professionals perform some or all of the following duties:

- Plan and direct forest surveys and related studies and prepare reports and recommendations
- Establish short- and long-term plans for management of forest lands and forest resources
- Plan and direct woodlands harvesting, reforestation, silviculture and fire prevention and fire suppression programs, road building, wildlife management, environmental protection and insect and vegetation control programs
- Negotiate terms and conditions of agreements and contracts for forest harvesting, forest management and leasing of forest lands
- Monitor contract compliance and results of forestry activities
- Ensure adherence to government regulations and company objectives
- Plan and conduct public relations programs, and education and extension programs related to forestry
- Develop and oversee programs for tree seedling production and woodlands nursery operations
- Conduct advanced research in the areas of tree improvement, nursery seedling production, forest soils, forest ecology, forest mensuration, forest operations and other areas
- Provide advice and recommendations, as a consultant on forestry issues, to private woodlot owners, municipal, provincial or federal governments or to companies.

- Certification as a forester or forest engineer by provincially chartered associations is required in provinces having such associations.
- A two-year practicum of supervised work experience and professional examinations are usually required before registration.
- Supervisory and senior occupations in this unit group require additional experience.

Additional information

- With experience, mobility is possible to management positions in government and industry.

Classified elsewhere

- Forest economists (in 4162 *Economists and Economic Policy Researchers and Analysts*)
- Forestry and woodlands operations managers (in 0811 *Primary Production Managers (Except Agriculture)*)
- Managers of government forestry policy and program administration (in 0412 *Government Managers – Economic Analysis, Policy Development and Program Administration*)
- Managers of research in forestry (in 0212 *Architecture and Science Managers*)

Employment requirements

- A bachelor's degree in forestry or forestry engineering is required.

2123 Agricultural Representatives, Consultants and Specialists

Agricultural representatives, consultants and specialists provide assistance and advice to farmers on all aspects of farm management, cultivation, fertilization, harvesting, soil erosion and composition, disease prevention, nutrition, crop rotation and marketing. They are employed by businesses, institutions and governments that assist the farming community or they may be self-employed.

Example titles

agricultural consultant
agricultural extension supervisor
agricultural livestock specialist
agricultural representative
agricultural soil and crop specialist
agriculturist
agrologist

agronomist
consulting agrologist
crop specialist
farm management consultant
field service agent
grower's advisor
professional agrologist (P.Ag.)

Main duties

Agricultural representatives, consultants and specialists perform some or all of the following duties:

- Provide counselling and advisory services to farmers on crop cultivation and fertilization, harvesting, animal and poultry care, disease prevention, farm management, farm financing, marketing and other agricultural subjects
- Prepare and conduct advisory information sessions and lectures for farmers and other groups
- Conduct research, analyze agricultural data and prepare research reports
- Liaise with researchers, educators and government or business managers on matters pertaining to farming and agriculture
- Maintain records of services provided and the effects of advice given.

Agricultural representatives, consultants and specialists may specialize in specific aspects of agriculture such as animal science, field crops, horticulture, soil science, irrigation or drainage, farm management, marketing, agricultural economics, land use, and environmental management, appraisal or extension and education.

Employment requirements

- A bachelor's or master's degree in agriculture or in a related science is required.
- Membership or eligibility for membership in a provincial institute of agrology is usually required.
- In Quebec, membership in the professional corporation for agrologists is mandatory.

Classified elsewhere

- Agricultural engineers (in 2148 *Other Professional Engineers, n.e.c.*)
- Agrology technologists and technicians (in 2221 *Biological Technologists and Technicians*)
- *Biologists and Related Scientists* (2121)
- *Landscape and Horticulture Technicians and Specialists* (2225)
- Managers of agricultural extension and consulting services (in 0212 *Architecture and Science Managers*)
- Managers responsible for agricultural economic policy (in 0412 *Government Managers – Economic Analysis, Policy Development and Program Administration*)

2131 Civil Engineers

Civil engineers plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals, dams, ports and coastal installations and systems related to highway and transportation services, water distribution and sanitation. Civil engineers may also specialize in foundation analysis, building and structural inspection, surveying, geomatics and municipal planning. Civil engineers are employed by engineering consulting companies, in all levels of government, by construction firms and in many other industries, or they may be self-employed.

Example titles

bridge engineer
civil engineer
construction engineer
environmental engineer
geodetic engineer
geomatics engineer
highway engineer
hydraulics engineer
municipal engineer

project engineer, construction
public works engineer
sanitation engineer
structural engineer
surveying engineer
traffic engineer
transportation engineer
water management engineer

Main duties

Civil engineers perform some or all of the following duties:

- Confer with clients and other members of the engineering team and conduct research to determine project requirements
- Plan and design major civil projects such as buildings, roads, bridges, dams, water and waste management systems and structural steel fabrications
- Develop construction specifications and procedures
- Evaluate and recommend appropriate building and construction materials
- Interpret, review and approve survey and civil design work
- Conduct field services for civil works
- Ensure construction plans meet guidelines and specifications of building codes and other regulations
- Establish and monitor construction work schedules
- Conduct feasibility studies, economic analyses, municipal and regional traffic studies, environmental impact studies or other investigations
- Monitor air, water and soil quality and develop procedures to clean up contaminated sites

- Conduct technical analyses of survey and field data for development of topographic, soil, hydrological or other information and prepare reports
- Act as project or site supervisor for land survey or construction work
- Prepare contract documents and review and evaluate tenders for construction projects
- Supervise technicians, technologists and other engineers and review and approve designs, calculations and cost estimates.

Employment requirements

- A bachelor's degree in civil engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.

Additional information

- There is considerable mobility between civil engineering specializations at the less senior levels.

2131 Civil Engineers

- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, urban planning, sales, marketing or management.
- Supervisory and senior positions in this unit group require experience

Classified elsewhere

- Chemical environmental engineers (in 2134 *Chemical Engineers*)
- *Construction Managers* (0711)
- *Engineering Managers* (0211)
- *Geological Engineers* (2144)
- *Transportation Managers* (0713)

2132 Mechanical Engineers

Mechanical engineers research, design and develop machinery and systems for heating, ventilating and air conditioning, power generation, transportation, processing and manufacturing. They also perform duties related to the evaluation, installation, operation and maintenance of mechanical systems. Mechanical engineers are employed by consulting firms, by power-generating utilities and in a wide range of manufacturing, processing and transportation industries, or they may be self-employed.

Example titles

acoustics engineer
automotive engineer
design engineer – mechanical
energy conservation engineer
engineer, power generation
fluid mechanics engineer
heating, ventilation and air conditioning (HVAC)
engineer

mechanical engineer
mechanical maintenance engineer
nuclear engineer
piping engineer
refrigeration engineer
robotics engineer
thermal design engineer
tool engineer

Main duties

Mechanical engineers perform some or all of the following duties:

- Conduct research into the feasibility, design, operation and performance of mechanisms, components and systems
- Plan and manage projects, and prepare material, cost and timing estimates, reports and design specifications for machinery and systems
- Design power plants, machines, components, tools, fixtures and equipment
- Analyze dynamics and vibrations of mechanical systems and structures
- Supervise and inspect the installation, modification and commissioning of mechanical systems at construction sites or in industrial facilities
- Develop maintenance standards, schedules and programs and provide guidance to industrial maintenance crews
- Investigate mechanical failures or unexpected maintenance problems
- Prepare contract documents and evaluate tenders for industrial construction or maintenance
- Supervise technicians, technologists and other engineers and review and approve designs, calculations and cost estimates.

Employment requirements

- A bachelor's degree in mechanical engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.

- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is considerable mobility between mechanical engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Mechanical engineers work closely with civil, electrical, aerospace, chemical, industrial and other engineers, and mobility is possible between some fields of specialization in these disciplines.

Classified elsewhere

- *Engineering Managers* (0211)
- *Industrial and Manufacturing Engineers* (2141)
- *Metallurgical and Materials Engineers* (2142)
- Power engineers or stationary engineers (in 7351 *Stationary Engineers and Auxiliary Equipment Operators*)

2133 Electrical and Electronics Engineers

Electrical and electronics engineers design, plan, research, evaluate and test electrical and electronic equipment and systems. They are employed by electrical utilities, communications companies, manufacturers of electrical and electronic equipment, consulting firms, and by a wide range of manufacturing, processing and transportation industries and government.

Example titles

avionics engineer
control systems engineer
design engineer, electrical
distribution planning engineer, electrical
electrical engineer
electrical network engineer
electronics engineer

instrumentation and control engineer
planning engineer, electrical systems
process control engineer, electrical
roadway lighting design engineer
television systems engineer
test engineer, electronics

Main duties

Electrical and electronics engineers perform some or all of the following duties:

- Conduct research into the feasibility, design, operation and performance of electrical generation and distribution networks, electrical machinery and components and electronic communications, instrumentation and control systems, equipment, and components
- Prepare material cost and timing estimates, reports and design specifications for electrical and electronic systems and equipment
- Design electrical and electronic circuits, components, systems and equipment
- Supervise and inspect the installation, modification, testing and operation of electrical and electronic systems and equipment
- Develop maintenance and operating standards for electrical and electronic systems and equipment
- Investigate electrical or electronic failures
- Prepare contract documents and evaluate tenders for construction or maintenance
- Supervise technicians, technologists, programmers, analysts and other engineers.

Electrical and electronics engineers may specialize in a number of areas including electrical design for residential, commercial or industrial installations, electrical power generation and transmission, and instrumentation and control systems.

Employment requirements

- A bachelor's degree in electrical or electronics engineering or in an appropriate related engineering discipline is required.

- A master's or doctoral degree in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- *Engineering Managers* (0211)
- *Software Engineers and Designers* (2173)

2134 Chemical Engineers

Chemical engineers research, design, and develop chemical processes and equipment, oversee the operation and maintenance of industrial chemical, plastics, pharmaceutical, resource, pulp, and food processing plants and perform duties related to chemical quality control, environmental protection and biochemical or biotechnical engineering. Chemical engineers are employed in a wide range of manufacturing and processing industries, consulting firms, government, research and educational institutions.

Example titles

adhesives engineer
biochemical engineer
biotechnical engineer
chemical engineer, environmental
chemical process engineer
industrial hygiene engineer
industrial waste treatment engineer
liquid fuels engineer

petrochemical engineer
polymer engineer
process control engineer, chemical
project engineer, chemical
pulp and paper engineer
refinery engineer
waste treatment engineer

Main duties

Chemical engineers perform some or all of the following duties:

- Conduct economic and technical feasibility studies in areas related to chemical, petroleum, pulp and paper, food or other processing industries
- Conduct research into the development or improvement of chemical engineering processes, reactions and materials
- Evaluate chemical process technology and equipment and determine production specifications
- Design and test chemical processing and associated plants and equipment
- Oversee the construction, modification, operation and maintenance of pilot plants, processing units or processing plants
- Establish and conduct quality control programs, operating procedures and control strategies to ensure consistency and adherence to standards for raw materials, products and waste products or emissions
- Prepare contract documents and evaluate tenders for the process aspects of industrial construction
- Supervise technicians, technologists and other engineers
- May work in an administrative capacity, for example, in the development of guidelines and specifications for the handling of dangerous chemicals, environmental protection, or standards for foods, materials and consumer goods.

Chemical engineers may specialize in the products and processes of a particular industry such as pulp and paper manufacturing, pharmaceuticals, petroleum refining, energy processing, plastics, metal extraction and refining, or adhesives and coatings production. They may also specialize in areas that are in various industries such as process control, pollution control or fermentation processes.

Employment requirements

- A bachelor's degree in chemical engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is considerable mobility between chemical engineering specializations at the less senior levels.

2134 Chemical Engineers

- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Chemical engineers work closely with chemists and other scientists and engineers and mobility is possible between some fields of specialization.

Classified elsewhere

- Agricultural and biomedical engineers (in 2148 *Other Professional Engineers, n.e.c.*)
- *Chemists* (2112)
- Civil environmental engineers (in 2131 *Civil Engineers*)
- *Engineering Managers* (0211)
- *Metallurgical and Materials Engineers* (2142)
- *Petroleum Engineers* (2145)
- Process control engineers with electrical or electronic specialization (in 2133 *Electrical and Electronics Engineers*)

2141 Industrial and Manufacturing Engineers

Industrial and manufacturing engineers conduct studies, and develop and supervise programs to achieve the best use of equipment, human resources, technology, materials and procedures to enhance efficiency and productivity. Industrial and manufacturing engineers are employed in consulting firms, manufacturing and processing companies, in government, financial, health care and other institutions, or they may be self-employed.

Example titles

engineer, computer integrated manufacturing
(CIM)
fire prevention engineer
industrial engineer
manufacturing engineer

plant engineer
production engineer
quality control engineer
safety engineer
work measurement engineer

Main duties

Industrial and manufacturing engineers perform some or all of the following duties:

- Plan and design plant layouts and facilities
- Study new machinery and facilities and recommend or select efficient combinations
- Develop flexible or integrated manufacturing systems and procedures
- Conduct studies and implement programs to determine optimum inventory levels for production and to allow optimum utilization of machinery, materials and resources
- Analyze costs of production
- Design, develop and conduct time studies and work simplification programs
- Determine human resource and skill requirements and develop training programs
- Develop performance standards, evaluation systems and wage and incentive programs
- Conduct studies of the reliability and performance of plant facilities and production or administrative systems
- Develop maintenance standards, schedules and programs
- Establish programs and conduct studies to enhance industrial health and safety or to identify and correct fire and other hazards
- Evaluate or assess industrial facilities
- Supervise technicians, technologists, analysts, administrative staff and other engineers.

- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- Industrial engineers develop and implement organizational and management systems, and manufacturing engineers design production processes.
- There is considerable mobility between industrial engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, administration or management.

Employment requirements

- A bachelor's degree in industrial engineering or in a related engineering discipline is required.

2141 Industrial and Manufacturing Engineers

Classified elsewhere

- *Computer Engineers (Except Software Engineers and Designers) (2147)*
- *Engineering Managers (0211)*
- *Mechanical Engineers (2132)*
- *Metallurgical and Materials Engineers (2142)*
- *Organizational analysts (in 1122 Professional Occupations in Business Services to Management)*

2142 Metallurgical and Materials Engineers

Metallurgical and materials engineers conduct studies of the properties and characteristics of metals and other non-metallic materials and plan, design and develop machinery and processes to concentrate, extract, refine and process metals, alloys and other materials such as ceramics, semiconductors and composite materials. Metallurgical and materials engineers are employed in consulting engineering firms, mining, metal processing and manufacturing companies, and in government, research and educational institutions.

Example titles

ceramics engineer
corrosion engineer
electrometallurgical engineer
foundry engineer
hydrometallurgical engineer

materials engineer
metallurgical engineer
physical metallurgical engineer
pyrometallurgical engineer
welding engineer

Main duties

Metallurgical and materials engineers perform some or all of the following duties:

- Conduct studies and design, develop and specify the processes, and machinery to concentrate, extract, refine and process metals from ores
- Conduct studies on the properties and characteristics of materials and design, develop and specify processes for moulding, shaping, forming and thermal treatment of metals, alloys and metallic systems, ceramics, semiconducting and other materials
- Conduct chemical and physical analytical studies, failure analyses and other studies and recommend material selection, design of materials, corrosion control measures, operational testing and other procedures
- Co-ordinate production testing and control of metal refining, smelting or foundry operations or non-metallic materials production operations
- Supervise technologists, technicians and other engineers and scientists.

- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- Metallurgical engineers research and develop new alloys and systems for extracting metal from ores; materials engineers research and develop new non-metallic materials with physical characteristics to meet specific requirements.
- There is considerable mobility between engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Metallurgical and materials engineers work closely with other engineers and scientists and mobility is possible between some fields of specialization.

Employment requirements

- A bachelor's degree in metallurgical, materials, ceramic or chemical engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).

Classified elsewhere

- *Chemical Engineers* (2134)
- *Chemists* (2112)
- *Engineering Managers* (0211)
- *Mining Engineers* (2143)
- Physical metallurgists and materials scientists (in 2115 *Other Professional Occupations in Physical Sciences*)

2143 Mining Engineers

Mining engineers plan, design, organize and supervise the development of mines, mine facilities, systems and equipment; and prepare and supervise the extraction of metallic or non-metallic minerals and ores from underground or surface mines. Mining engineers are employed by mining companies, consulting engineering companies, manufacturers, government and in educational and research institutions.

Example titles

mine design engineer
mine development engineer
mine layout engineer
mine production engineer

mineral engineer
mine safety engineer
mine ventilation engineer
mining engineer

Main duties

Mining engineers perform some or all of the following duties:

- Conduct preliminary surveys and studies of ore, mineral or coal deposits to assess the economic and environmental feasibility of potential mining operations
- Determine the appropriate means of safely and efficiently mining deposits
- Determine and advise on appropriate drilling and blasting methods for mining, construction or demolition
- Design shafts, ventilation systems, mine services, haulage systems and supporting structures
- Design, develop and implement computer applications such as for mine design, mine modelling, mapping or for monitoring mine conditions
- Plan and design or select mining equipment and machinery and mineral treatment machinery and equipment in collaboration with other engineering specialists
- Plan, organize and supervise the development of mines and mine structures and the operation and maintenance of mines
- Prepare operations and project estimates, schedules and reports
- Implement and co-ordinate mine safety programs
- Supervise and co-ordinate the work of technicians, technologists, survey personnel, and other engineers and scientists.

- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Mining engineers work closely with geologists, geological engineers, metallurgical engineers, and other engineers and scientists, and mobility is possible between some fields of specialization.

Classified elsewhere

- *Engineering Managers* (0211)
- *Geological Engineers* (2144)
- *Geologists, Geochemists and Geophysicists* (2113)
- *Metallurgical and Materials Engineers* (2142)
- *Mine managers (in 0811 Primary Production Managers (Except Agriculture))*
- *Petroleum Engineers* (2145)

Employment requirements

- A bachelor's degree in mining engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.

2144 Geological Engineers

Geological engineers conduct geological and geotechnical studies to assess suitability of locations for civil engineering, mining and oil and gas projects; and plan, design, develop and supervise programs of geological data acquisition and analysis and the preparation of geological engineering reports and recommendations. Geological engineers are employed in consulting engineering companies, electrical utilities, mining and petroleum companies and in government and research and educational institutions.

Example titles

geological engineer
geophysical engineer

hydrogeological engineer

Main duties

Geological engineers perform some or all of the following duties:

- Plan, develop and co-ordinate programs of geotechnical, geological, geophysical or geohydrological data acquisition, analysis and mapping to assist in the development of civil engineering, mining, petroleum and waste management projects or for regional development
- Analyze and prepare recommendations and reports for construction or improvements to foundations of civil engineering projects such as rock excavation, pressure grouting and hydraulic channel erosion control
- Analyze and prepare recommendations and reports on settlement of buildings, stability of slopes and fills, and probable effects of landslides and earthquakes to support construction and civil engineering projects
- Conduct theoretical and applied study of groundwater flow and contamination and develop prescriptions for site selection, treatment and construction
- Plan, develop, co-ordinate and conduct theoretical and experimental studies in mining exploration, mine evaluation and feasibility studies relative to the mining industry
- Conduct surveys and studies of ore deposits, ore reserve calculations and mine design
- Design, develop and implement computer applications for geophysics, geochemistry, geology, mapping and related fields
- Supervise technologists, technicians and other engineers and scientists.

- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is considerable mobility between engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Geological engineers work closely with geologists and other scientists and engineers, and mobility is possible between some fields of specialization.

Classified elsewhere

- *Civil Engineers* (2131)
- *Engineering Managers* (0211)
- *Geologists, Geochemists and Geophysicists* (2113)
- *Land Surveyors* (2154)
- *Mining Engineers* (2143)
- *Petroleum Engineers* (2145)

Employment requirements

- A bachelor's degree in geological engineering or in a related discipline is required.

2145 Petroleum Engineers

Petroleum engineers conduct studies for the exploration, development and extraction of oil and gas deposits; and plan, design, develop and supervise projects for the drilling, completion, testing and re-working of oil and gas wells. They are employed by petroleum producing companies, consulting companies, well logging or testing companies, in government, and research and educational institutions.

Example titles

drilling engineer, oil and gas
petroleum engineer
petroleum engineer, completion

production engineer, oil and gas
reservoir engineer, petroleum
subsea engineer

Main duties

Petroleum engineers perform some or all of the following duties:

- Conduct feasibility assessment studies for developing new oil and gas fields
- Direct and monitor oil and gas drilling operations
- Develop drilling programs, select sites and specify drilling fluids, bit selection, drill stem testing procedures and equipment
- Direct and monitor the completion and evaluation of wells, well testing and well surveys
- Design and select artificial lift machinery, and well and surface production equipment and systems and specify programs for corrosion control and oil or gas treatment
- Develop specifications for and monitor and supervise well modification and stimulation programs to maximize oil and gas recovery
- Analyze reservoir rock and fluid data to design optimum recovery methods and to predict reservoir performance and reserves
- Monitor and forecast oil and gas reservoir performance and recommend oil recovery techniques which extend the economic life of wells
- Design, develop and co-ordinate the installation, maintenance and operation of subsea well-head and production equipment.

Petroleum engineers may specialize in drilling, production, reservoir analysis or subsea operations.

Employment requirements

- A bachelor's degree in petroleum engineering or in a related engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.

- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is mobility between petroleum engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.

Classified elsewhere

- *Chemical Engineers (2134)*
- *Engineering Managers (0211)*
- *Geological Engineers (2144)*
- *Geologists, Geochemists and Geophysicists (2113)*
- *Supervisors, Oil and Gas Drilling and Service (8222)*

2146 Aerospace Engineers

Aerospace engineers research, design and develop aerospace vehicles, aerospace systems and their components, and perform duties related to their testing, evaluation, installation, operation and maintenance. They are employed by aircraft and spacecraft manufacturers, air transport carriers, and in government and educational and research institutions.

Example titles

aerodynamics engineer
aeronautical engineer
aerospace engineer
aircraft design engineer

stress engineer – aerospace
structural engineer, aerospace
systems engineer, aerospace
test engineer, aerospace

Main duties

Aerospace engineers perform some or all of the following duties:

- Design and develop aerospace vehicles, systems and components such as aircraft, spacecraft, missiles, satellites and space-based communication systems
- Develop and conduct computer simulations of aerospace vehicles, systems and components using advanced mathematical modelling
- Prepare specifications for materials and processes to be used in aerospace manufacturing, maintenance, repair or modification
- Supervise and co-ordinate the manufacturing, assembly modification, repair and overhaul of aircraft and spacecraft
- Co-ordinate ground and flight tests of air and spacecraft
- Develop operational specifications, maintenance schedules and manuals for operators
- Develop the technical phases of logistical and operational support for aerospace vehicles and systems
- Investigate and report on structural or other component or system failures, accidents or incidents and prepare recommendations for corrective action.

Employment requirements

- A bachelor's degree in aerospace engineering or in a related engineering discipline, such as mechanical engineering or engineering physics, is required.
- A master's degree or doctorate in a related engineering discipline may be required.

- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is considerable mobility between aerospace engineering specializations at the less senior levels.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
- Aerospace engineers work closely with other scientists and engineers and mobility is possible between some fields of specialization.

Classified elsewhere

- Aircraft maintenance engineers (AME) (in 7315 *Aircraft Mechanics and Aircraft Inspectors*)
- Aircraft maintenance engineers (AME) – avionics (in 2244 *Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors*)
- Avionics engineers (in 2133 *Electrical and Electronics Engineers*)
- *Engineering Managers* (0211)
- *Mechanical Engineers* (2132)
- *Metallurgical and Materials Engineers* (2142)

2147 Computer Engineers (Except Software Engineers and Designers)

Computer engineers (except software engineers and designers) research, plan, design, develop, modify, evaluate and integrate computer and telecommunications hardware and related equipment, and information and communication system networks including mainframe systems, local and wide area networks, fibre-optic networks, wireless communication networks, Intranets, the Internet and other data communications systems. They are employed by computer and telecommunication hardware manufacturers, by engineering, manufacturing and telecommunications firms, in information technology consulting firms, by governmental, educational and research institutions and in information technology units throughout the private and public sectors.

Example titles

application specific integrated circuit (ASIC)

design engineer

computer engineer

computer hardware engineer

engineer, computer hardware

engineer, telecommunications hardware

fibre-optic network designer

hardware circuit board designer

hardware design engineer

hardware development engineer

hardware engineer

network systems engineer

network test engineer

systems designer – hardware

technical architect – hardware

wireless communications network engineer

Main duties

Computer and telecommunications hardware engineers perform some or all of the following duties:

- Analyze user's requirements, and design and develop system architecture and specifications
- Research, design, develop and integrate computer and telecommunications hardware such as microprocessors, integrated circuit boards and semiconductor lasers
- Develop and conduct design verification simulations and prototype bench tests of components
- Supervise, inspect and provide design support during the manufacturing, installation and implementation of computer and telecommunications hardware
- Establish and maintain relationships with suppliers and clients
- May lead and co-ordinate teams of engineers, technologists, technicians and drafters in the design and development of computer and telecommunications hardware.

Network system and data communication engineers perform some or all of the following duties:

- Research, design and develop information and communication system network architecture
- Research, evaluate and integrate network system and data communication hardware and software

- Assess, document and optimize the capacity and performance of information and communication system networks
- May lead and co-ordinate teams of design professionals in the development and integration of information and communication system architecture, hardware and software.

Computer engineers may specialize in a number of areas including analog and digital signal processing, fibre optics, integrated circuits, lasers, microprocessors, microwaves and radio astronomy.

Employment requirements

- Computer engineers require a bachelor's degree in computer engineering, electrical or electronics engineering, engineering physics or computer science.
- A master's or doctoral degree in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

2147 Computer Engineers (Except Software Engineers and Designers)

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- *Electrical and Electronics Engineers* (2133)
- *Engineering Managers* (0211)
- *Information Systems Analysts and Consultants* (2171)
- *Software Engineers and Designers* (2173)
- *Web Designers and Developers* (2175)

2148 Other Professional Engineers, n.e.c.

This unit group includes agricultural and bio-resource engineers, biomedical engineers, engineering physicists and engineering scientists, marine and naval engineers, textile engineers and other specialized engineering occupations which are not classified elsewhere.

Example titles

agricultural engineer
biomedical engineer
bio-resource engineer
engineering physicist
engineering scientist

food processing engineer
marine engineer
naval architect
naval engineer
textile engineer

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Agricultural and bio-resource engineers design and develop machinery, structures, equipment and systems related to agriculture and food processing.
- Biomedical engineers design and develop medical diagnostic and clinical instrumentation, equipment and procedures; develop devices to assist persons with disabilities; advise hospital administrators on planning, acquisition and use of medical equipment; and modify and install or supervise installation of equipment.
- Engineering physicists and engineering scientists conduct research, develop processes, programs and equipment to expand fundamental knowledge in the applied sciences and engineering and to support advanced engineering and scientific applications.
- Marine and naval engineers design and develop marine vessels and floating structures and associated marine power plants, propulsion systems and related systems and equipment and oversee the building, maintenance and repair of vessels and marine systems.
- Textile engineers design and develop processes, equipment and procedures for the production of fibres, yarns and textiles.

- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is limited mobility between the engineering specializations included in this unit group.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.

Classified elsewhere

- Biochemical and biotechnical engineers (in 2134 *Chemical Engineers*)
- Marine engineer officers – water transport (in 2274 *Engineer Officers, Water Transport*)
- Physicists (in 2111 *Physicists and Astronomers*)

Employment requirements

- A bachelor's degree in an appropriate engineering discipline is required.
- A master's degree or doctorate in a related engineering discipline may be required.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports, and to practise as a Professional Engineer (P.Eng.).

2151 Architects

Architects conceptualize, plan and develop designs for the construction and renovation of commercial, institutional and residential buildings. They are employed by architectural firms, private corporations and governments, or they may be self-employed.

Example titles

architect
architectural standards specialist
chief architect

consulting architect
industrial and commercial buildings architect
residential architect

Main duties

Architects perform some or all of the following duties:

- Consult with clients to determine type, style and purpose of renovations or new building construction being considered
- Conceptualize and design buildings and develop plans describing design specifications, building materials, costs and construction schedules
- Prepare sketches and models for clients
- Prepare or supervise the preparation of drawings, specifications and other construction documents for use by contractors and tradespersons
- Prepare bidding documents, participate in contract negotiations and award construction contracts
- Monitor activities on construction sites to ensure compliance with specifications
- Conduct feasibility studies and financial analyses of building projects.

Architects may specialize in a particular type of construction such as residential, commercial, industrial or institutional.

Employment requirements

- A bachelor's degree from an accredited school of architecture
 - or*
 - Completion of the syllabus of studies from the Royal Architectural Institute of Canada (RAIC) is required.
- A master's degree in architecture may be required.
- Completion of a three-year internship under the supervision of a registered architect is required.
- Completion of the architect registration examination is required.
- Registration with the provincial association of architects in the province of work is required.

Additional information

- Progression to senior positions, such as chief architect, is possible with experience.

Classified elsewhere

- *Architecture and Science Managers* (0212)
- Database architects (in 2172 *Database Analysts and Data Administrators*)
- *Landscape Architects* (2152)
- Naval architects (in 2148 *Other Professional Engineers, n.e.c.*)
- Software architects (in 2173 *Software Engineers and Designers*)
- Structural engineers (in 2131 *Civil Engineers*)
- Technical architects, hardware (in 2147 *Computer Engineers (Except Software Engineers and Designers)*)

2152 Landscape Architects

Landscape architects conceptualize landscape designs, develop contract documents and oversee the construction of landscape development for commercial projects, office complexes, parks, golf courses and residential development. They are employed by government environmental and development agencies, landscape consulting firms and by architectural and engineering firms, or they are self-employed.

Example titles

architect, landscape
landscape architect

landscape planner

Main duties

Landscape architects perform some or all of the following duties:

- Confer with clients to determine design needs
- Survey and assess designated sites and develop designs taking into consideration landscape features, buildings, climate, future usage and other aspects
- Prepare or oversee the preparation of detailed drawings for sites, including features such as trees, shrubs, gardens, lighting, walkways, patios, decks, benches, fences, retaining walls and fountains
- Prepare or oversee preparation of site plans, reports, sketches, models, photographs, maps, land use studies and design plans
- Estimate costs, prepare specifications and evaluate tenders for landscape construction projects
- Conduct environmental design studies, including environmental assessment, planning and the preservation and re-creation of historical sites
- Conduct community and neighbourhood physical planning studies, participate in multidisciplinary urban design studies and prepare design guidelines
- May manage and supervise landscape construction work.

- In the remaining provinces and territories, landscape architects usually require two years of landscape design experience and an interview by their respective provincial associations to receive association certification.

Classified elsewhere

- *Architects* (2151)
- *Landscape and Horticulture Technicians and Specialists* (2225)
- Landscape architecture managers (in 0212 *Architecture and Science Managers*)
- Landscape design contractors (in 8255 *Landscaping and Grounds Maintenance Contractors and Managers*)
- *Urban and Land Use Planners* (2153)

Employment requirements

- A bachelor's degree in landscape architecture is required.
- A master's degree in landscape architecture may be required.
- In Ontario and British Columbia, landscape architects require a two-year internship and the successful completion of a provincial registration exam.

2153 Urban and Land Use Planners

Urban and land use planners develop plans and recommend policies for managing land use, physical facilities and associated services for urban and rural areas and remote regions. They are employed by all levels of government, land developers, engineering and other consulting companies or may work as private consultants.

Example titles

city planner
community and urban planner
environmental planner
land use planner
long-range planner
municipal planner

park planner
planner
planning analyst
recreation planner
regional planner
urban planner

Main duties

Urban and land use planners perform some or all of the following duties:

- Compile and analyze data on demographic, economic, legal, political, cultural, sociological, physical and other factors affecting land use
- Confer with municipal, provincial and federal authorities, civic leaders, social scientists, lawyers, land developers, the public and special interest groups to formulate and develop land use or community plans
- Prepare and recommend land development concepts and plans for zoning, subdivisions, transportation, public utilities, community facilities, parks, agricultural and other land uses
- Prepare plans for environmental protection, such as wildlife preserves, national and provincial parks, and protection of watersheds
- Present plans to civic, rural and regional authorities and hold public meetings to present plans, proposals or planning studies to the general public and special interest groups
- Review and evaluate proposals for land use and development plans and prepare recommendations
- Process application for land development permits and administer land use plans and zoning by-laws
- Formulate long-range objectives and policies relative to future land use and the protection of the environment
- Supervise and co-ordinate work of urban planning technicians and technologists.

Employment requirements

- A bachelor's degree in urban and regional planning, geography, architecture, engineering or a related discipline is required.
- A master's degree in one of these disciplines may be required.
- Membership in the Canadian Institute of Planners is usually required.
- Membership in a provincial planning institute may be required in some provinces.

Additional information

- Progression to management positions in planning is possible with experience.

Classified elsewhere

- *Architects* (2151)
- *Land Surveyors* (2154)

2154 Land Surveyors

Land surveyors plan, direct and conduct legal surveys to establish the location of real property boundaries, contours and other natural or human-made features, and prepare and maintain cross-sectional drawings, official plans, records and documents pertaining to these surveys. They are employed by federal, provincial and municipal governments, private sector land surveying establishments, real estate development, natural resource, engineering and construction firms, or they may be self-employed.

Example titles

commissioned land surveyor
land surveyor
legal surveyor

professional land surveyor
property surveyor

Main duties

Land surveyors perform some or all of the following duties:

- Develop survey plans, methods and procedures for conducting legal surveys
- Plan, direct and supervise or conduct surveys to establish and mark legal boundaries of properties, parcels of lands, provincial and Canada Lands, aboriginal land claims, well-sites, mining claims, utility rights-of-way, roadways and highways
- Survey and lay out subdivisions for rural and urban development
- Determine precise locations using electronic distance measuring equipment and global positioning systems (GPS)
- Analyze, manage and display data using geographic information systems (GIS) and computer-aided design and drafting (CAD)
- Record all measurements and other information obtained during survey activities
- Prepare or supervise the preparation and compilation of all data, plans, charts, records and documents related to surveys of real property boundaries
- Certify and assume liability for surveys made to establish real property boundaries
- Advise, provide consultation and testify as an expert witness on matters related to legal surveys.

Employment requirements

- A bachelor's degree in geomatics engineering or survey engineering
 - or
 - A college diploma in survey science or geomatics technology with additional academic credits and successful completion of equivalent examinations set by a regional board of examiners for land surveyors is required.
- A one- to three-year articling period is required.
- Successful completion of professional land surveyor examinations is required.
- A federal or provincial land surveyor's licence is required.

Additional information

- Federal statutes require a separate license from the Association of Canada Land Surveyors to survey areas such as national parks, aboriginal lands, offshore areas and northern territories.

Classified elsewhere

- Engineering technologists and technicians who apply geotechnical and topographical information to land use and urban planning (in 2231 *Civil Engineering Technologists and Technicians*)
- Geomatics and survey engineers (in 2131 *Civil Engineers*)
- Hydrographic surveyors (in 2113 *Geologists, Geochemists and Geophysicists*)
- *Land Survey Technologists and Technicians* (2254)
- *Mapping and Related Technologists and Technicians* (2255)
- *Urban and Land Use Planners* (2153)

2161 Mathematicians, Statisticians and Actuaries

Mathematicians and statisticians research mathematical or statistical theories, and develop and apply mathematical or statistical techniques, for solving problems in such fields as science, engineering, business and social science. Actuaries apply mathematics, statistics, probability and risk theory to assess potential financial impacts of future events. Mathematicians, statisticians and actuaries are employed by universities, governments, bank and trust companies, insurance companies, pension benefit consulting firms, professional associations and science and engineering consulting firms.

Example titles

actuary
biostatistician
consulting actuary
demographer

insurance actuary
mathematician
statistical analyst
statistician

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Mathematicians conduct research to extend mathematical knowledge in traditional areas of mathematics such as algebra, geometry, probability and logic and apply mathematical techniques to the solution of problems in scientific fields such as physical science, engineering, computer science or other fields such as operations research, business or management.
- Statisticians conduct research into the mathematical basis of the science of statistics, develop statistical methodology and advise on the practical application of statistical methodology. They also apply statistical theory and methods to provide information in scientific and other fields such as biological and agricultural science, business and economics, physical sciences and engineering, and the social sciences.
- Actuaries apply mathematical models to forecast and calculate the probable future costs of insurance and pension benefits. They design life, health, and property insurance policies, and calculate premiums, contributions and benefits for insurance policies, and pension and superannuation plans. They may assist investment fund managers in portfolio asset allocation decisions and risk management. They also use these techniques to provide legal evidence on the value of future earnings.

- Actuaries usually require post-secondary education in actuarial science, mathematics, statistics, economics, commerce or business administration.
- Actuaries are conferred fellowships through the Canadian Institute of Actuaries upon successful completion of professional examinations and Three years of work experience in the actuarial field as an actuarial assistant or in a related position.

Additional information

- With experience, actuaries may progress to managerial positions in consulting, insurance and finance. They may also be self-employed.

Classified elsewhere

- *Financial and Investment Analysts* (1112)
- *Financial Auditors and Accountants* (1111)
- *Other Financial Officers* (1114)

Employment requirements

- Mathematicians and statisticians usually require a graduate degree in mathematics or statistics.

2171 Information Systems Analysts and Consultants

Information systems analysts and consultants conduct research, develop and implement information systems development plans, policies and procedures, and provide advice on a wide range of information systems issues. They are employed in information technology consulting firms and in information technology units throughout the private and public sectors, or they may be self-employed.

Example titles

computer consultant
computer systems analyst
informatics consultant
informatics security analyst
information systems business analyst
information systems quality assurance analyst

IT (information technology) consultant
management information systems (MIS) analyst
systems auditor
systems consultant
systems security analyst

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Information systems business analysts and consultants confer with clients to identify and document requirements, conduct business and technical studies, design, develop, integrate and implement information systems business solutions, and provide advice on information systems strategy, policy, management, security and service delivery.
- Systems security analysts confer with clients to identify and document requirements, assess physical and technical security risks to data, software and hardware, and develop policies, procedures and contingency plans to minimize the effects of security breaches.
- Information systems quality assurance analysts develop and implement policies and procedures throughout the software development life cycle to maximize the efficiency, effectiveness and overall quality of software products and information systems.
- Systems auditors conduct independent third-party reviews to assess quality assurance practices, software products and information systems.

- Certification or training provided by software vendors may be required by some employers.

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Database Analysts and Data Administrators* (2172)
- *Financial Auditors and Accountants* (1111)
- *Professional Occupations in Business Services to Management* (1122)
- *Software Engineers and Designers* (2173)
- *Web Designers and Developers* (2175)

Employment requirements

- A bachelor's degree in computer science, computer systems engineering, software engineering, business administration or a related discipline
or
Completion of a college program in computer science is usually required.
- Experience as a computer programmer is usually required.

2172 Database Analysts and Data Administrators

Database analysts design, develop and administer data management solutions using database management software. Data administrators develop and implement data administration policy, standards and models. They are employed in information technology consulting firms and in information technology units throughout the private and public sectors.

Example titles

data administrator

database administrator (DBA)

database analyst

database architect

data custodian

data dictionary administrator

data warehouse analyst

technical architect – database

Main duties

Database analysts perform some or all of the following duties:

- Collect and document user's requirements
- Design and develop database architecture for information systems projects
- Design, construct, modify, integrate, implement and test data models and database management systems
- Conduct research and provide advice to other informatics professionals regarding the selection, application and implementation of database management tools
- Operate database management systems to analyze data and perform data mining analysis.
- May lead, co-ordinate or supervise other workers in this group.

Data administrators perform some or all of the following duties:

- Develop and implement data administration policy, standards and models
- Research and document data requirements, data collection and administration policy, data access rules and security
- Develop policies and procedures for network and/or internet database access and usage and for the backup and recovery of data
- Conduct research and provide advice to other information systems professionals regarding the collection, availability, security and suitability of data
- Write scripts related to stored procedures and triggers
- May lead and co-ordinate teams of data administrators in the development and implementation of data policies, standards and models.

Employment requirements

- A bachelor's degree, usually in computer science or in mathematics
or
Completion of a college program in computer science is usually required.
- Computer programming experience is usually required.

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Information Systems Analysts and Consultants* (2171)
- *Software Engineers and Designers* (2173)
- *Web Designers and Developers* (2175)

2173 Software Engineers and Designers

Software engineers and designers research, design, evaluate, integrate and maintain software applications, technical environments, operating systems, embedded software, information warehouses and telecommunications software. They are employed in information technology consulting firms, information technology research and development firms, and information technology units throughout the private and public sectors, or they may be self-employed.

Example titles

application architect
computer software engineer
embedded software engineer
software architect
software design engineer
software designer

software design verification engineer
software engineer
software testing engineer
systems integration engineer – software
technical architect – software
telecommunications software engineer

Main duties

Software engineers and designers perform some or all of the following duties:

- Collect and document user's requirements and develop logical and physical specifications
- Research, evaluate and synthesize technical information to design, develop and test computer-based systems
- Develop data, process and network models to optimize architecture and to evaluate the performance and reliability of designs
- Plan, design and co-ordinate the development, installation, integration and operation of computer-based systems
- Assess, test, troubleshoot, document, upgrade and develop maintenance procedures for operating systems, communications environments and applications software
- May lead and co-ordinate teams of information systems professionals in the development of software and integrated information systems, process control software and other embedded software control systems.

- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Engineers are eligible for registration following graduation from an accredited educational program, three or four years of supervised work experience in engineering and passing a professional practice examination.
- Experience as a computer programmer is usually required.

Classified elsewhere

- *Computer and Information Systems Managers* (0213)
- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Database Analysts and Data Administrators* (2172)
- *Electrical and Electronics Engineers* (2133)
- *Information Systems Analysts and Consultants* (2171)
- *Systems Testing Technicians* (2283)
- *Web Designers and Developers* (2175)

Employment requirements

- A bachelor's degree, usually in computer science, computer systems engineering, software engineering or mathematics
 - or*
 - Completion of a college program in computer science is usually required.
- A master's or doctoral degree in a related discipline may be required.

2174 Computer Programmers and Interactive Media Developers

Computer programmers write, modify, integrate and test computer code for microcomputer and mainframe software applications, data processing applications, operating systems-level software and communications software. Interactive media developers write, modify, integrate and test computer code for Internet applications, computer-based training software, computer games, film, video and other interactive media. They are employed in computer software development firms, information technology consulting firms, and in information technology units throughout the private and public sectors.

Example titles

application programmer
business application programmer
computer game developer
computer programmer
e-business (electronic business) software developer
interactive media developer
multimedia developer

operating systems programmer
programmer analyst
scientific programmer
software developer
software programmer
systems programmer
Web programmer

Main duties

Computer programmers perform some or all of the following duties:

- Write, modify, integrate and test software code
- Maintain existing computer programs by making modifications as required
- Identify and communicate technical problems, processes and solutions
- Prepare reports, manuals and other documentation on the status, operation and maintenance of software
- Assist in the collection and documentation of user's requirements
- Assist in the development of logical and physical specifications
- May lead and co-ordinate teams of computer programmers
- May research and evaluate a variety of software products.

Interactive media developers perform some or all of the following duties:

- Program animation software to predefined specifications for interactive CDs, DVDs, video game cartridges and internet-based applications
- Program special effects software for film and video applications
- Write, modify, integrate and test software code for e-commerce and other Internet applications
- Assist in the collection and documentation of user's requirements
- Assist in the development of logical and physical specifications

- May lead and co-ordinate teams of interactive media developers
- May research and evaluate a variety of interactive media software products.

Employment requirements

- A bachelor's degree in computer science or in another discipline with a significant programming component
 - or*
 - Completion of a college program in computer science is usually required.
- Specialization in programming for engineering and scientific applications requires specific post-secondary study or experience.

Additional information

- Progression to information systems analyst, software engineer or Web designer is possible with experience.

2174 Computer Programmers and Interactive Media Developers

Classified elsewhere

- *Computer Network Technicians* (2281)
- *Database Analysts and Data Administrators* (2172)
- E-business managers (in 0611 *Sales, Marketing and Advertising Managers*)
- *Graphic Designers and Illustrators* (5241)
- *Information Systems Analysts and Consultants* (2171)
- *Software Engineers and Designers* (2173)
- *Systems Testing Technicians* (2283)
- *Web Designers and Developers* (2175)

2175 Web Designers and Developers

Web designers and developers research, design, develop and produce Internet and Intranet sites. They are employed in computer software development firms, information technology consulting firms, information technology units throughout the private and public sectors, or they may be self-employed.

Example titles

e-business Web site developer	Web designer
e-commerce Web site developer	Web developer
Internet site designer	Web manager
Internet site developer	Webmaster
Intranet site designer	Web site developer

Main duties

Web designers and developers perform some or all of the following duties:

- Consult with clients to develop and document Web site requirements
- Prepare mock-ups and storyboards
- Develop Web site architecture and determine hardware and software requirements
- Source, select and organize information for inclusion and design the appearance, layout and flow of the Web site
- Create and optimize content for the Web site using a variety of graphics, database, animation and other software
- Plan, design, write, modify, integrate and test Web-site related code
- Conduct tests and perform security and quality controls
- May lead and co-ordinate multidisciplinary teams to develop Web site graphics, content, capacity and interactivity
- May research and evaluate a variety of interactive media software products

Employment requirements

- A bachelor's degree, usually in computer science, communications or business
 - or*
 - Completion of a college program in computer science, graphic arts, Web design or business is required.
- Experience as a computer programmer or graphic designer is usually required.

Classified elsewhere

- *Computer Network Technicians* (2281)
- *Computer Programmers and Interactive Media Developers* (2174)
- E-business managers (in 0611 *Sales, Marketing and Advertising Managers*)
- *Graphic Designers and Illustrators* (5241)
- *Information Systems Analysts and Consultants* (2171)
- Network systems engineers (in 2147 *Computer Engineers (Except Software Engineers and Designers)*)
- *Systems Testing Technicians* (2283)

2211 Chemical Technologists and Technicians

Chemical technologists and technicians provide technical support and services or may work independently in chemical engineering, chemical and biochemical research and analysis, industrial chemistry, chemical quality control and environmental protection. They are employed by research and development and quality control laboratories, consulting engineering companies, in chemical, petrochemical, pharmaceutical and a variety of other manufacturing and processing industries, and by utilities, health, education and government establishments.

Example titles

analytical technician, chemical
biochemistry technologist

chemical analyst

chemical engineering technician

chemical engineering technologist

chemical laboratory analyst

chemical research technician

chemical technician

chemical technologist

food technologist

formulation technician

geochemical technician

industrial hygiene technologist

mass spectrometer technician

master dyer – textiles

paint technician

pilot plant technician

quality control technician – chemical processing

quality control technician – food processing

Main duties

Chemical technologists perform some or all of the following duties:

- Set up and conduct chemical experiments, tests and analyses using techniques such as chromatography, spectroscopy, physical and chemical separation techniques and microscopy
- Operate and maintain laboratory equipment and apparatus and prepare solutions of gas or liquid, reagents, and sample formulations
- Compile records and interpret experimental or analytical results
- Develop and conduct programs of sampling and analysis to maintain quality standards of raw materials, chemical intermediates and products
- Assist in the development of chemical engineering processes, studies of chemical engineering procurement, construction, inspection and maintenance and the development of standards, procedures and health and safety measures
- Operate experimental chemical or petrochemical pilot plants
- Conduct or assist in air and water quality testing and assessments, environmental monitoring and protection activities, and development of and compliance with standards
- Assist in synthesis of small molecules for the purpose of creating drug candidates.
- Assist in the design and fabrication of experimental apparatus.

Chemical technicians perform some or all of the following duties:

- Assist in setting up and conducting chemical experiments, tests and analyses
- Operate and maintain laboratory equipment and apparatus and prepare solutions of gas and liquid, reagents and sample formulations
- Compile records for analytical studies
- Assist in developing and conducting programs of sampling and analysis to maintain quality standards
- Carry out a limited range of other technical functions in support of chemical research, tests and analyses, and environmental air and water quality monitoring and protection
- Assist in the design and fabrication of experimental apparatus.

Employment requirements

- Chemical technologists usually require completion of a two- or three-year college program in chemical, biochemical or chemical engineering technology or a closely related discipline.
- Chemical technicians usually require completion of a one- or two-year college program in chemical, biochemical or chemical engineering technology.
- National certification for chemical technologists and technicians is available through the Canadian Society for Chemical Technology.

2211 Chemical Technologists and Technicians

- Certification in chemical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required by employers.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.
- A period of supervised work experience, usually two years, is required before certification.

Additional information

- Considerable mobility is possible among jobs within this occupational group.
- Progression to managerial positions is possible with experience.
- Some chemical technologists and technicians working in support of fundamental research in chemistry or biochemistry are university graduates.

Classified elsewhere

- Biochemistry technologists working as medical laboratory technologists (in 3211 *Medical Laboratory Technologists and Pathologists' Assistants*)
- Process technicians who operate the controls of chemical or petrochemical processing plants (in 9232 *Petroleum, Gas and Chemical Process Operators*)

2212 Geological and Mineral Technologists and Technicians

Geological and mineral technologists and technicians provide technical support and services or may work independently in the fields of oil and gas exploration and production, geophysics, petroleum engineering, geology, mining and mining engineering, mineralogy, extractive and physical metallurgy, metallurgical engineering and environmental protection. They are employed by petroleum and mining companies, consulting geology and engineering firms, and by governments and educational institutions as well as by a variety of manufacturing, construction and utilities companies.

Example titles

assayer
geological technician
geophysical technologist
groundwater technologist
log technician
marine geoscience technologist
metallurgical technologist
mineralogy technician
mining engineering technologist

mining technologist
petroleum engineering technologist
petroleum technician
petrology technician
reservoir engineering technician
rock mechanics technician
seismic technician
welding technologist

Main duties

Geological and mineral technologists perform some or all of the following duties:

- Conduct or direct geological, geophysical, geochemical, hydrographic or oceanographic surveys, prospecting field trips, exploratory drilling, well logging or underground mine survey programs
- Operate and maintain geophysical survey and well logging instruments and equipment
- Prepare notes, sketches, geological maps and cross sections
- Prepare, transcribe or analyze seismic, gravimetric, well log or other geophysical and survey data
- Assist engineers and geologists in the evaluation and analysis of petroleum and mineral reservoirs
- Prepare or supervise the preparation of rock, mineral or metal samples and perform physical and chemical laboratory tests
- Conduct or assist in environmental audits, in the design of measures to minimize undesirable environmental effects of new or expanded mining and oil and gas operations, and in the development of waste management and other related environmental protection procedures
- May supervise oil and gas well drilling, well completions and work-overs
- May conduct or supervise studies and programs related to mine development, mining methods, mine ventilation, lighting, drainage and ground control

- May assist engineers and metallurgists in specifying material selection, metal treatments or corrosion protection systems
- May assist hydrogeologists in evaluating groundwater and well circulation and in report preparation
- May develop specifications for heat treatment of metals or for welding, design welding fixtures, troubleshoot welding processes or quality problems and supervise welding projects.

Geological and mineral technicians perform some or all of the following duties:

- Participate in geological, geophysical, geochemical, hydrographic or oceanographic surveys, prospecting field trips, exploratory drilling, well logging or underground mine survey programs and in environmental audits and related environmental protection activities
- Operate and maintain geophysical survey and well logging instruments and equipment
- Prepare notes, sketches, geological maps and cross sections
- Assist in preparing, transcribing or analyzing seismic, gravimetric, well log or other geophysical and survey data
- Assist in the preparation of rock, mineral or metal samples and in conducting physical and chemical laboratory tests
- Assist in hydrogeological field and laboratory studies and in preparation of reports

2212 Geological and Mineral Technologists and Technicians

- Carry out a limited range of other technical functions in support of geology, geophysics and petroleum and mining engineering.

Employment requirements

- Geological and mineral technologists usually require completion of a two- to three-year college program in geological technology, petroleum technology, petroleum engineering technology, hydrogeology or groundwater technology, mining technology, mining engineering technology, mineralogy, metallurgical technology, or welding technology.
- Geophysics technologists usually require completion of a two- to three-year college program in electronics technology.
- Geological and mineral technicians usually require completion of a one- to two-year college program in a related field.
- Certification in geological and mineral technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required by employers.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.
- A period of supervised work experience, usually two years, is required before certification.

Additional information

- There is limited mobility between occupations in this group.
- Mobility may be possible between geophysical technology and electronic technology.
- Mobility may be possible between some occupations in this group and related fields of civil engineering technology.

Classified elsewhere

- *Civil Engineering Technologists and Technicians* (2231)
- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- *Mapping and Related Technologists and Technicians* (2255)
- *Supervisors, Mining and Quarrying* (8221)
- *Supervisors, Oil and Gas Drilling and Service* (8222)
- Technologists and technicians whose primary duties are to perform chemical laboratory tests (in 2211 *Chemical Technologists and Technicians*)

2213 Meteorological Technicians

Meteorological technicians observe weather and atmospheric conditions, record and interpret meteorological data, transmit and report on recorded information, and provide meteorological information and advice to the general public, the transportation industry and the media. They are employed by the Atmospheric Environment Service of Environment Canada and by the armed forces, private consulting companies, resource and utility companies and by provincial governments.

Example titles

aerological technician
avalanche controller
climate data processor
climate service specialist
climate service technician
ice service specialist

meteorological inspector
meteorological technician
officer-in-charge, weather station
operations technician, weather station
surface weather observer
weather service specialist

Main duties

Meteorological technicians perform some or all of the following duties:

- Observe, record and transmit atmospheric and weather information including air pressure, temperature, humidity, wind, precipitation, cloud and ultraviolet conditions
- Observe, chart and report on ice conditions in navigable waters
- Provide weather information to various users such as pilots, farmers, shipping industries and news media
- Inspect and service various weather service installations and maintain equipment and instruments
- Analyze and interpret weather data
- Maintain climatological databases and participate in the production of weather maps and charts
- Observe snow conditions and participate in programs to control avalanches in mountainous terrain.

Employment requirements

- Completion of secondary school is required.
- Completion of a meteorological technician program provided by the Atmospheric Environment Service is required.
- Initial training may be up to one year, with subsequent specialized training available.

Classified elsewhere

- *Meteorologists* (2114)

2221 Biological Technologists and Technicians

Biological technologists and technicians provide technical support and services to scientists, engineers and other professionals working in fields such as agriculture, resource management, environmental protection, plant and animal biology, microbiology, cell and molecular biology and health sciences, or may work independently in these fields. They are employed in both laboratory and field settings by governments, manufacturers of food products, chemicals and pharmaceuticals, biotechnology companies, health, research and educational institutions, environmental consulting companies and resource and utilities companies.

Example titles

agricultural technician
agricultural technologist
agrology technician
aquaculture technician
bacteriological technician
biological laboratory technologist
botanical technician
fisheries technician

fish hatchery technician
food bacteriological technician
microbiology quality control technologist
microbiology technologist (except medical)
plant breeding technician
seed technologist
wildlife biology technician

Main duties

Biological technologists perform some or all of the following duties:

- Set up and conduct biological, microbiological and biochemical tests and laboratory analyses in support of research and quality control in food production, sanitation, pharmaceutical production, biotechnology and other fields
- Apply methods and techniques such as microscopy, histochemistry, chromatography, electrophoresis and spectroscopy
- Perform experimental procedures in agriculture, plant breeding, animal husbandry, biology and biomedical research
- Conduct field research and surveys to collect data and samples of water, soil, and plant and animal populations
- Conduct environmental monitoring and compliance activities for the protection of fisheries stock, wildlife and other natural resources
- Analyze data and prepare reports
- Conduct or supervise operational programs such as fish hatchery, greenhouse and livestock production programs.

Biological technicians perform some or all of the following duties:

- Assist in conducting biological, microbiological and biochemical tests and laboratory analyses

- Perform limited range of technical functions in support of agriculture, plant breeding, animal husbandry, biology, biomedical research and environmental protection
- Assist in conducting field research and surveys to collect data and samples of water, soil, and plant and animal populations
- Assist in analysis of data and preparation of reports.

Employment requirements

- Completion of a two- to three-year college program in a field related to agriculture, biology, microbiology, wildlife or resource management is usually required for employment as a biological technologist.
- Completion of a one- to two-year college program in a related field is required for employment as a biological technician.
- Certification with provincial associations is available, but voluntary.

Additional information

- There is limited mobility between occupations in this group.
- Some technologists and technicians working in support of government and academic research in biology are university graduates.

2221 Biological Technologists and Technicians

Classified elsewhere

- *Agricultural and Fish Products Inspectors* (2222)
- Biochemistry technologists and biochemistry laboratory technicians (in 2211 *Chemical Technologists and Technicians*)
- *Biologists and Related Scientists* (2121)
- Biomedical engineering technologists (in 2241 *Electrical and Electronics Engineering Technologists and Technicians*)
- *Conservation and Fishery Officers* (2224)
- *Forestry Technologists and Technicians* (2223)
- *Medical Laboratory Technicians* (3212)
- *Medical Laboratory Technologists and Pathologists' Assistants* (3211)

2222 Agricultural and Fish Products Inspectors

Agricultural and fish products inspectors inspect agricultural and fish products for conformity to prescribed production, storage and transportation standards. They are employed by government departments and agencies and by private sector food processing companies. Supervisors of agricultural and fish products inspectors are also included in this group.

Example titles

agricultural products inspector
crop certification inspector
dairy products inspector
fish inspector
fish products inspector
fruit and vegetables inspector
grain inspector

livestock inspector
meat inspector
plant protection inspector
poultry inspector
supervisor, agricultural products inspection
supervisor, fish products inspection

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Fish and fish products inspectors inspect fish, fish products, fish handling and processing methods and prepare reports and ensure that regulations are followed.
- Fruit and vegetables inspectors inspect fresh and frozen fruit and vegetables at inspection centres and prepare reports on crop production and market conditions.
- Grain inspectors inspect and grade all classes of grain at terminal elevators, monitor the fumigation of infested grain, and examine storage, handling and transportation equipment to ensure that sanitary procedures are followed.
- Meat inspectors monitor the operations and sanitary conditions of slaughtering and meat processing plants and inspect carcasses to ensure they are fit for consumption.
- Plant protection inspectors certify seed crops, oversee the quarantine, treatment or destruction of plants and plant products, and the fumigation of plants and plant product imports and exports.

- Several years of experience in agricultural production or fish processing are usually required.

- Completion of in-house training courses is required.

Additional information

- Progression to managerial positions in this field is possible with experience.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- Fish graders and meat graders who perform routine quality control duties or tally landed fish (in 9465 *Testers and Graders, Food and Beverage Processing*)
- *Forestry Technologists and Technicians* (2223)
- *Inspectors in Public and Environmental Health and Occupational Health and Safety* (2263)

Employment requirements

- Completion of secondary school is required.
- Government inspectors usually require a bachelor's degree or college diploma in agriculture, biology, chemistry, food processing technology or a related discipline.
- Inspectors (other than government) may require a bachelor's degree or college diploma in a related discipline.

2223 Forestry Technologists and Technicians

Forestry technologists and technicians may work independently or perform technical and supervisory functions in support of forestry research, forest management, forest harvesting, forest resource conservation and environmental protection. They are employed by the forest industry sector, provincial and federal governments, consulting firms, and other industries and institutions or they may be self-employed.

Example titles

conservation technician – forestry	forest survey technician
cruising technician – forestry	forest technician
enforcement officer – forestry	resource officer, forest inventory
extension ranger – forestry	resource technician – forestry
fire suppression officer – forestry	scaler technician – logging
forest fire technician	scaling co-ordinator – logging
forestry technician	silviculture technician
forestry technologist	

Main duties

Forestry technologists and technicians perform some or all of the following duties:

- Conduct, supervise and participate in forest inventory cruises, surveys and field measurements following accepted scientific and operational procedures
- Assist and perform technical functions in the preparation of forest management and harvest plans using photogrammetric and mapping techniques and computerized information systems
- Assist in planning and supervise construction of access routes and forest roads
- Implement, supervise and perform technical functions in silvicultural operations involving site preparation, planting, and tending of tree crops
- Co-ordinate activities such as timber scaling, forest fire suppression, disease or insect control or pre-commercial thinning of forest stands
- Supervise and perform technical functions in forest harvesting operations
- Monitor activities of logging companies and contractors and enforce regulations such as those concerning environmental protection, resource utilization, fire safety and accident prevention
- Provide forestry education, advice and recommendations to woodlot owners, community organizations and the general public
- Develop and maintain computer databases
- Supervise forest tree nursery operations

- Provide technical support to forestry research programs in areas such as tree improvement, seed orchard operations, insect and disease surveys or experimental forestry and forest engineering research.

Employment requirements

- Completion of a one- to three-year college program in forestry technology or in a renewable resource program or forest ranger program is usually required.
- Certification by, or registration with, a provincial association as a forestry technologist or technician may be required.
- Certification or licensing as a scaler is required for some positions.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- Mobility may be possible to occupations in natural resource and wildlife management and in parks management.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Conservation and Fishery Officers* (2224)
- *Foresters and forest engineers* (in 2122 *Forestry Professionals*)
- *Supervisors, Logging and Forestry* (8211)

2224 Conservation and Fishery Officers

Conservation and fishery officers enforce the federal and provincial regulations established for the protection of fish, wildlife and other natural resources and collect and relay information on resource management. They are employed by federal and provincial government departments.

Example titles

conservation officer
fish and wildlife officer
fishery officer
forest ranger – wildlife management

game officer
game warden
natural resources officer
park ranger

Main duties

Conservation and fishery officers perform some or all of the following duties:

- Generate public awareness of fish and wildlife conservation and regulations
- Conduct patrols by truck, aircraft, boat, or on foot, to ensure compliance with the provincial and federal statutes relating to fish, wildlife and the environment
- Investigate complaints, arrest violators, prepare briefs and present evidence in court
- Issue licences, export documents and special permits and collect royalties assessed on fish, wildlife and timber resources
- Implement and supervise approved techniques in preventing or overcoming damage caused by wildlife
- Perform resource protection duties
- Gather resource data by making inventories of fish, collecting water samples and assisting biologists in scientific research
- Supervise or provide firearms safety training courses and trapper education courses.

Employment requirements

- Completion of a one- to three-year college program in renewable resources management is required.
- On-the-job training and courses related to law enforcement and resource management are provided.
- A class-5 driver's licence, pesticide applicator's licence and explosives licence may be required.

Additional information

- Progression to senior and supervisory positions is possible with experience.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Fish inspectors* (in 2222 *Agricultural and Fish Products Inspectors*)
- *Forestry Technologists and Technicians* (2223)

2225 Landscape and Horticulture Technicians and Specialists

This unit group includes those who survey and assess landscapes; draw sketches and build models of landscape designs; construct and maintain gardens, parks, golf courses and other landscaped environments; advise clients on issues related to horticulture; breed, cultivate and study plants; and treat injured and diseased trees and plants. They are employed by landscape designers and contractors, lawn service and tree care establishments, golf courses, nurseries and greenhouses, and municipal, provincial and national parks, or they may be self-employed.

Example titles

arborist
golf course superintendent
greenskeeper
horticultural technician
horticulture specialist
horticulturist
hydroponics technician

landscape architectural technician
landscape designer
landscape gardener
landscaper
landscape technician
lawn care specialist
tree service technician

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Arborists and tree service technicians examine trees and shrubs to diagnose problems and disease, and apply various treatments such as pruning, spraying, repairing damaged areas and injecting with treatment solutions.
- Golf course superintendents direct crews who maintain the health and appearance of golf courses and their surrounding landscapes, plant and move trees, and apply fertilizers, fungicides, herbicides and pesticides.
- Horticulturists plan and co-ordinate the growth and use of plants for landscaping, ornamental uses and other purposes.
- Landscape designers and landscape architectural technicians and technologists survey and assess sites, prepare drawings, sketches and reports and perform other duties to assist landscape architects in designing landscaped environments.
- Landscape gardeners plant and maintain private and public lawns and gardens.
- Landscapers plan and construct landscaped environments which may include trees, shrubberies, lawns, fences, decks, patios and other landscape structures.
- Lawn care specialists visit clients, assess the health of lawns, and apply fertilizer, pesticides and other lawn care products.

Employment requirements

- Completion of a university or college program in agronomy, arboriculture, horticulture, landscaping, landscape design or landscape technology is usually required.
- Experience as a landscape and grounds maintenance labourer may be required for golf course superintendents, landscape gardeners and landscapers.
- An apprenticeship program is available for horticulturists, arboriculturists and landscape gardeners.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Botanists* (in 2121 *Biologists and Related Scientists*)
- *Forestry Technologists and Technicians* (2223)
- *Landscape Architects* (2152)
- *Landscaping and Grounds Maintenance Contractors and Managers* (8255)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Nursery and Greenhouse Workers* (8432)
- *Supervisors, Landscape and Horticulture* (8256)

2231 Civil Engineering Technologists and Technicians

Civil engineering technologists and technicians provide technical support and services to scientists, engineers and other professionals, or may work independently in fields such as structural engineering, municipal engineering, construction design and supervision, highways and transportation engineering, water resources engineering, geotechnical engineering and environmental protection. They are employed by consulting engineering and construction companies, public works, transportation and other government departments and in many other industries.

Example titles

bridge design technician
building materials technician
civil engineering technician
civil engineering technologist
construction technologist
foundation technologist

highway technician
municipal engineering assistant
soil technologist – civil engineering
specifications writer, construction
structural design technologist
structural investigator

Main duties

Civil engineering technologists perform some or all of the following duties:

- Develop engineering designs and drawings from preliminary concepts and sketches
- Prepare construction specifications, cost and material estimates, project schedules and reports
- Supervise or conduct field surveys, inspections or technical investigations of topography, soils, drainage and water supply systems, road and highway systems, buildings and structures to provide data for engineering projects
- Conduct or supervise inspection and testing of construction materials
- May supervise, monitor and inspect construction projects.

Civil engineering technicians perform some or all of the following duties:

- Assist in developing engineering specifications and drawings
- Participate in field surveys, inspections or technical investigations of topography, soils, drainage and water supply systems, road and highway systems, buildings and structures to provide data for engineering projects
- Perform other technical functions in support of civil engineering activities.

Employment requirements

- Completion of a two- or three-year college program in civil engineering technology or a closely related discipline is usually required for civil engineering technologists.

- Completion of a one- or two-year college program in civil engineering technology is usually required for civil engineering technicians.
- Certification in civil engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.
- A period of supervised work experience, usually two years, is required before certification.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- There is mobility to related occupations, such as drafting technologists and technicians and construction inspectors and estimators.
- Progression to construction supervisors or construction managers is possible with experience.

Classified elsewhere

- *Architectural Technologists and Technicians* (2251)
- *Construction Estimators* (2234)
- *Construction Inspectors* (2264)
- *Construction Managers* (0711)
- *Drafting Technologists and Technicians* (2253)
- *Land Survey Technologists and Technicians* (2254)

2232 Mechanical Engineering Technologists and Technicians

Mechanical engineering technologists and technicians provide technical support and services or may work independently in mechanical engineering fields such as the design, development, maintenance and testing of machines, components, tools, heating and ventilating systems, power generation and power conversion plants, manufacturing plants and equipment. They are employed by consulting engineering, manufacturing and processing companies, institutions and government departments.

Example titles

aeronautical technologist

heating designer

HVAC (heating, ventilation and air conditioning) technologist

machine designer

marine engineering technologist

mechanical engineering technician

mechanical engineering technologist

mechanical technologist

mould designer

thermal station technician

tool and die designer

tool designer

Main duties

Mechanical engineering technologists perform some or all of the following duties:

- Prepare and interpret conventional and computer-assisted design (CAD) engineering designs, drawings, and specifications for machines and components, power transmission systems, process piping, heating, ventilating and air-conditioning systems
- Prepare cost and material estimates, project schedules and reports
- Conduct tests and analyses of machines, components and materials to determine their performance, strength, response to stress and other characteristics
- Design moulds, tools, dies, jigs and fixtures for use in manufacturing processes
- Inspect mechanical installations and construction
- Prepare contract and tender documents
- Supervise, monitor and inspect mechanical installations and construction projects
- Prepare standards and schedules and supervise mechanical maintenance programs or operations of mechanical plants.

Mechanical engineering technicians perform some or all of the following duties:

- Assist in preparing conventional and computer-assisted design (CAD) engineering designs, drawings and specifications
- Carry out a limited range of mechanical tests and analyses of machines, components and materials
- Assist in the design of moulds, tools, dies, jigs and fixtures for use in manufacturing processes

- Assist in inspection of mechanical installations and construction projects

- Participate in the installation, repair and maintenance of machinery and equipment.

Employment requirements

- Completion of a two- or three-year college program in mechanical engineering technology is usually required for mechanical engineering technologists.
- Completion of a one- or two-year college program in mechanical engineering technology is usually required for mechanical engineering technicians.
- Certification in mechanical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.
- A period of supervised work experience, usually two years, is required before certification.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- There is mobility to other related occupations such as technical sales or drafting technologists and technicians.
- Progression to supervisory occupations such as mechanical construction supervisor, manufacturing supervisor or operations maintenance manager is possible with experience.

2232 Mechanical Engineering Technologists and Technicians

Classified elsewhere

- *Contractors and Supervisors, Trades and Related Workers* (721)
- *Drafting Technologists and Technicians* (2253)
- *Industrial Designers* (2252)
- *Managers in Manufacturing and Utilities* (091)
- *Technical Sales Specialists – Wholesale Trade* (6221)

2233 Industrial Engineering and Manufacturing Technologists and Technicians

Industrial engineering and manufacturing technologists and technicians may work independently or provide technical support and services in the development of production methods, facilities and systems, and the planning, estimating, measuring and scheduling of work. They are employed by manufacturing and insurance companies, government departments, and establishments in other industries.

Example titles

CAD/CAM programmer
industrial engineering technician
industrial engineering technologist
loss prevention technologist
manufacturing technician
manufacturing technologist
planning technician

plastics manufacturing technician
pulp and paper manufacturing technologist
quality assurance technologist
scheduling technician – manufacturing
textile technologist
time study analyst

Main duties

Industrial engineering and manufacturing technologists perform some or all of the following duties:

- Develop and conduct production, inventory and quality assurance programs in manufacturing or in other industries
- Design plant layouts and production facilities
- Develop and carry out work study and related programs
- Develop and carry out industrial health, safety and fire prevention plans and programs and conduct safety training programs
- Develop applications using CAD/CAM (computer-assisted drafting, computer-assisted manufacturing) for the control of robots, computer numerical control (CNC) machines and other manufacturing processes and operations.

Industrial engineering and manufacturing technicians perform some or all of the following duties:

- Assist in the design of plant layouts
- Conduct work measurement or other studies
- Collect and compile operational or experimental data and assist in the development of estimates, schedules, specifications and reports
- Collect and analyze data and samples in support of quality assurance and industrial health and safety programs
- Develop manufacturing and processing procedures and variables, set machine or equipment controls, oversee production and inspect processes.

Technologists and technicians in this unit group may specialize in the development of production processes, quality assurance programs, plans and schedules in a particular industrial area such as metal fabrication, plastics, pulp and paper, or textile manufacturing.

Employment requirements

- Completion of a two- or three-year college program or equivalent in industrial engineering technology, pulp and paper technology, plastics technology, textile technology, manufacturing technology or a related discipline is usually required for industrial engineering or manufacturing technologists.
- Completion of a one- or two-year college program in industrial engineering technology or in a related discipline is usually required for industrial engineering or manufacturing technicians.
- Certification in industrial engineering or manufacturing technology or in a related field is available through provincial or territorial associations of engineering/applied science technologists and technicians and may be required for some positions.
- A period of supervised work experience, usually two years, is required before certification.
- A college diploma in manufacturing technology and/or trade certification and experience in machining and tooling or metalworking is required for CAD-CAM/CNC programmers.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

2233 Industrial Engineering and Manufacturing Technologists and Technicians

Additional information

- There is mobility to related fields such as technical sales.
- Progression to managerial positions is possible with experience.

Classified elsewhere

- CNC machine operators (in 951 *Machining, Metalworking, Woodworking and Related Machine Operators*)
- *Machinists and Related Occupations* (723)
- *Technical Sales Specialists – Wholesale Trade* (6221)
- Textile technologists/technicians working in support of chemical dyeing and finishing and quality control technologists/technicians in food or chemical industries or laboratories (in 2211 *Chemical Technologists and Technicians*)

2234 Construction Estimators

Construction estimators analyze costs of and prepare estimates on civil engineering, architectural, structural, electrical and mechanical construction projects. They are employed by residential, commercial and industrial construction companies and major electrical, mechanical and trade contractors, or they may be self-employed.

Example titles

chief estimator – construction
construction estimator
cost estimator – construction

principal estimator – construction
professional quantity surveyor
quantity surveyor – construction

Main duties

Construction estimators perform some or all of the following duties:

- Prepare estimates of probable costs of materials, labour and equipment for construction projects based on contract bids, quotations, schematic drawings and specifications
- Advise on tendering procedures, examine and analyze tenders, recommend tender awards and conduct negotiations
- Establish and maintain tendering process and set up cost monitoring and reporting systems and procedures
- Prepare cost and expenditure statements and forecasts at regular intervals for the duration of a project
- Prepare and maintain a directory of suppliers, contractors and subcontractors
- Liaise, consult and communicate with engineers, architects, owners, contractors and subcontractors, and prepare economic feasibility studies on changes and adjustments to cost estimates
- Manage and co-ordinate construction projects and prepare construction progress schedules.

Estimators may specialize in estimating costs for structural, electrical or mechanical construction projects.

Employment requirements

- Completion of secondary school is required.
- Completion of a three-year college program in civil or construction engineering technology
or
Several years of experience as a qualified tradesperson in a construction trade such as plumbing, carpentry or electrical, are required.
- Certification by the Canadian Institute of Quantity Surveyors is usually required.

Additional information

- Progression to more senior positions in this unit group, such as senior estimator or to construction management positions is possible with experience.

Classified elsewhere

- *Architectural Technologists and Technicians* (2251)
- *Civil Engineering Technologists and Technicians* (2231)
- *Civil Engineers* (2131)
- *Construction Managers* (0711)

2241 Electrical and Electronics Engineering Technologists and Technicians

Electrical and electronics engineering technologists and technicians may work independently or provide technical support and services in the design, development, testing, production and operation of electrical and electronic equipment and systems. They are employed by electrical utilities, communications companies, manufacturers of electrical and electronic equipment, consulting firms, and in governments and a wide range of manufacturing, processing and transportation industries.

Example titles

communications technologist
electrical engineering technician
electrical engineering technologist
electricity distribution network technologist
electronics design technologist
electronics engineering technician
electronics engineering technologist

electronics manufacturing technician
electronics manufacturing technologist
lighting technologist
metering technologist
microwave maintenance technician
production support technician – electronics
manufacturing

Main duties

Electrical and electronics engineering technologists perform some or all of the following duties:

- Design, develop and test power equipment and systems, industrial process control systems, telecommunication, broadcast, recording and audiovisual systems, micro-electronic systems and circuits, computers, computer systems and networks, and computer software
- Supervise the building and testing of prototypes according to general instructions and established standards
- Conduct or supervise the installation, commissioning, and operation of electrical and electronic equipment and systems other than aircraft electronics or instruments
- Carry out applied research in fields of electrical and electronic engineering and physics under the direction of scientists or engineers
- Set up and operate specialized and standard test equipment to diagnose, test and analyze the performance of electrical and electronic components, assemblies and systems
- Write specifications, schedules and technical reports and control schedules and budgets.

Electrical and electronics engineering technicians perform some or all of the following duties:

- Assist in the design, development and testing of electrical and electronic components, equipment, and systems

- Assist in inspection, testing, adjusting and evaluation of incoming electrical, electro-mechanical and electronic components and assemblies to ensure conformance with product specifications and tolerances
- Conduct life tests (burn-ins) on assemblies and record and analyze results
- Assist in building and testing prototypes to specifications
- Carry out a limited range of technical functions in support of research in electrical and electronic engineering and physics
- Install, operate and maintain electrical and electronic equipment and systems
- Calibrate electrical or electronic equipment and instruments according to technical manuals and written instructions
- Collect and compile operational or experimental data and assist in the preparation of estimates, schedules, budgets, specifications and reports.

Employment requirements

- Completion of a two- or three-year college program in electrical or electronics engineering technology, computer engineering technology, telecommunications technology or an equivalent is usually required for electrical or electronics engineering technologists.
- Completion of a one- or two-year college program in electrical or electronics engineering technology is usually required for electrical or electronics engineering technicians.

2241 Electrical and Electronics Engineering Technologists and Technicians

- Certification in electrical or electronics engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.
- A period of supervised work experience, usually two years, is required before certification.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- There is mobility to other related occupations such as technical sales, electronics service technicians, instrument technicians and avionics technicians.
- Progression to managerial positions in engineering, production or operations is possible with experience.

Classified elsewhere

- *Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors* (2244)
- *Electronic Service Technicians (Household and Business Equipment)* (2242)
- *Industrial Instrument Technicians and Mechanics* (2243)
- *Technical Sales Specialists – Wholesale Trade* (6221)

2242 Electronic Service Technicians (Household and Business Equipment)

Electronic service technicians service and repair household and business electronic equipment such as audio and video systems, computers and peripherals, office equipment and other consumer electronic equipment and assemblies. They are employed by electronic service and retail establishments, by wholesale distributors and within service departments of electronic manufacturing companies.

Example titles

alarm system technician
audio-video service technician
computer service technician
electronic service technician apprentice
electronic service technician supervisor

field service technician, electronic products
office equipment service technician
photocopy machine technician
radio and television service technician
satellite antenna servicer

Main duties

Electronic service technicians perform some or all of the following duties:

- Install, maintain and repair household and business electronic equipment, such as televisions, radios, video cassette recorders, stereo equipment, photocopiers, computers and peripherals
- Inspect and test electronic equipment, components and assemblies using multimeters, circuit testers, oscilloscopes, logic probes and other electronic test instruments, tools and equipment
- Diagnose and locate circuit, component and equipment faults
- Adjust, align, replace or repair electronic equipment, assemblies and components following equipment manuals and schematics, and using soldering tools and other hand and power tools
- Complete work orders, test and maintenance reports
- May supervise other electronic equipment service technicians.

- Trade certification for electronic technician, consumer products is compulsory in Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified electronics technicians, consumer products.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- Red Seal trade certification allows for interprovincial mobility.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Electrical and Electronics Engineering Technologists and Technicians (2241)*
- *Telecommunications Installation and Repair Workers (7246)*

Employment requirements

- Completion of a two- to three-year college program in electronics
or
Completion of a four-year apprenticeship program in electronic servicing and repair
or
Completion of high school or college courses in electronics and on-the-job training is required.

2243 Industrial Instrument Technicians and Mechanics

Industrial instrument technicians and mechanics repair, maintain, calibrate, adjust, and install industrial measuring and controlling instrumentation. They are employed by pulp and paper processing companies, nuclear and hydro power generating companies, mining, petrochemical and natural gas companies, industrial instrument and other manufacturing companies, and by industrial instrument servicing establishments.

Example titles

apprentice industrial instrument mechanic
industrial instrument mechanic
instrumentation technician, industrial

instrument technician, industrial
process control equipment mechanic

Main duties

Industrial instrument technicians and mechanics perform some or all of the following duties:

- Consult manufacturer's manuals, circuit diagrams and blueprints to determine tests and maintenance procedures for instruments used for measuring and controlling flow, level, pressure, temperature, chemical composition and other variables in manufacturing and processing
- Inspect and test operation of instruments and systems to diagnose faults using pneumatic, electrical and electronic testing devices and precision measuring instruments
- Repair and adjust system components, such as sensors, transmitters and programmable logic controllers, or remove and replace defective parts
- Calibrate components and instruments according to manufacturers' specifications
- Perform scheduled preventive maintenance work and complete test and maintenance reports
- Install control and measurement instruments on existing and new plant equipment and processes
- Consult with and advise process operators.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- or five-year apprenticeship program in industrial instrument repair
or
Completion of a two-year college program in industrial instrumentation technology and several years of work experience are usually required for trade certification.

- Industrial instrument mechanic trade certification is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified industrial instrument mechanics.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- Red Seal trade certification allows for interprovincial mobility.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Aircraft instrument technicians (in 2244 *Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors*)
- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- Industrial mechanics (in 7311 *Construction Millwrights and Industrial Mechanics (Except Textile)*)

2244 Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors

This unit group includes mechanics and technicians who install, adjust, repair and overhaul aircraft instrument, electrical or avionics systems on aircraft. This unit group also includes avionics inspectors who inspect instrument, electrical and avionics systems following assembly, modification, repair or overhaul. Workers in this unit group are employed by aircraft manufacturing, maintenance, repair and overhaul establishments and by airlines, the armed forces and other aircraft operators.

Example titles

aircraft electrical technician

aircraft electrician

aircraft instrument mechanic

aircraft instrument technician

aircraft maintenance engineer (AME) – avionics

avionics maintenance technician

avionics technician

inspector, avionics

instrument inspector, aircraft

instrument overhaul and repair mechanic –

avionics

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Aircraft instrument mechanics and technicians repair and overhaul, install, calibrate and test aircraft instruments.
- Aircraft electrical mechanics and technicians repair and overhaul, modify, install and test aircraft electrical systems and equipment.
- Avionics mechanics and technicians troubleshoot, repair and overhaul, test, modify, install and inspect aircraft electronic systems and components including communications, navigation, and autoflight equipment.
- Avionics inspectors inspect and test aircraft instrument, electrical and avionics systems and ensure that the installation, maintenance, repair and overhaul of these systems meet Transport Canada and company standards of performance and safety.

Aircraft mechanics and technicians who work in repair and overhaul shops service and test electrical, electronic and instrument components.

Avionics mechanics and technicians who work in maintenance hangars troubleshoot, repair, install and inspect aircraft systems and components.

Employment requirements

- Aircraft instrument and avionics mechanics and technicians require completion of a two- to three-year college program in avionics or electronics.
- Aircraft electrical mechanics and technicians require completion of a college program as an electrical or electronic technician.

• Four years of on-the-job or company apprenticeship training is required for all mechanics and technicians in this unit group.

• Avionics inspectors require completion of a two- to three-year college program in avionics or electronics
and

Three to five years of experience as an avionics mechanic or technician.

• Avionics inspectors, mechanics and technicians who sign maintenance releases and certify airworthiness require an Aircraft Maintenance Engineer's (AME) licence (category E – avionics) issued by Transport Canada.

• Industry certification is available from the Canadian Aviation Maintenance Council for some occupations in this unit group.

• In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

• Avionics inspectors, maintenance technicians and mechanics may acquire further endorsements to their AME licence allowing them to inspect and certify a broader range of aircraft and avionics systems.

• An AME licence can be obtained by fulfilling the education and training requirements as stated above and passing Transport Canada AME examinations.

• Progression to supervisory positions within specific areas of expertise is possible with experience.

2244 Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors

Classified elsewhere

- *Aircraft Assemblers and Aircraft Assembly Inspectors* (9481)
- Aircraft mechanics and maintenance engineers who maintain and inspect aircraft structures, mechanical, hydraulic or propulsion systems (in *7315 Aircraft Mechanics and Aircraft Inspectors*)
- Airworthiness inspectors – government (in 2262 *Engineering Inspectors and Regulatory Officers*)
- *Electrical Mechanics* (7333)
- *Industrial Instrument Technicians and Mechanics* (2243)

2251 Architectural Technologists and Technicians

Architectural technologists and technicians may work independently or provide technical assistance to professional architects and civil design engineers in conducting research, preparing drawings, architectural models, specifications and contracts and in supervising construction projects. Architectural technologists and technicians are employed by architectural and construction firms, and governments.

Example titles

architectural design technician
architectural design technologist

architectural technician
architectural technologist

Main duties

Architectural technologists and technicians perform some or all of the following duties:

- Assist in the development of architectural designs
- Analyze building codes, by-laws, space requirements, site requirements and other technical documents and reports
- Prepare manual and CAD (computer-assisted design) drawings, specifications, cost estimates and listings of quantities of material from conceptual drawings and instructions
- Construct architectural and display models, and 3-D virtual models of architectural designs
- Prepare contract and bidding documents
- May supervise drafters, technicians and technologists on the architectural team
- May supervise construction projects and co-ordinate, monitor and inspect work done by others.

Employment requirements

- Completion of a two- to three-year college program in architectural technology or a related subject is usually required.
- Certification in architectural technology or in a related field through provincial associations of architectural or engineering/applied science technologists and technicians may be required by employers.
- A period of supervised work experience, usually two years, is required before certification.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- There is mobility to other related occupations such as drafters, civil engineering technologists and technicians, construction estimators and construction inspectors.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Architects (2151)*
- *Civil Engineering Technologists and Technicians (2231)*
- *Construction Estimators (2234)*
- *Construction Inspectors (2264)*
- *Construction Managers (0711)*
- *Drafting Technologists and Technicians (2253)*
- *Land Survey Technologists and Technicians (2254)*

2252 Industrial Designers

Industrial designers conceptualize and produce designs for manufactured products. They are employed by manufacturing industries and private design firms or they may be self-employed.

Example titles

furniture designer
industrial design consultant
industrial designer

industrial products designer
product designer

Main duties

Industrial designers perform some or all of the following duties:

- Consult with client, engineers or production specialists to establish product requirements
- Analyze the intended use of product and user preferences
- Conduct research into cost, properties of production materials and methods of production
- Prepare design concepts, sketches or models for approval
- Prepare manufacturing drawings, specifications and guidelines for production and construct prototype of design
- Consult with engineers and production staff during manufacturing stage.

Employment requirements

- A university degree in industrial design, architecture, engineering
or
A college diploma in industrial design is required.
- Creative ability, as demonstrated by a portfolio of work, is required.

Additional information

- There is mobility between positions in this unit group.
- Mobility is possible to other design occupations.

Classified elsewhere

- *Architectural Technologists and Technicians* (2251)
- Civil engineering design technologists (in 2231 *Civil Engineering Technologists and Technicians*)
- Electrical and electronics design technologists (in 2241 *Electrical and Electronics Engineering Technologists and Technicians*)
- Engineering design and drafting technicians and technologists (in 2253 *Drafting Technologists and Technicians*)
- *Graphic Designers and Illustrators* (5241)
- *Interior Designers* (5242)
- Mechanical engineering equipment designers (in 2232 *Mechanical Engineering Technologists and Technicians*)
- *Theatre, Fashion, Exhibit and Other Creative Designers* (5243)

2253 Drafting Technologists and Technicians

Drafting technologists and technicians prepare engineering designs, drawings and related technical information, in multidisciplinary engineering teams or in support of engineers, architects or industrial designers, or they may work independently. They are employed by consulting and construction companies, utility, resource and manufacturing companies, all levels of government and by a wide range of other establishments.

Example titles

architectural draftsperson
computer-assisted design and drafting technologist
computer-assisted drafting (CAD) technician
design and drafting technologist
drafting technician
drafting technologist
draftsperson
electrical draftsperson

electromechanical draftsperson
electronic draftsperson
engineering design and drafting technologist
mechanical draftsperson
steel detailer – drafting
structural draftsperson
structural steel drafter-detailer
supervisor, drafting office

Main duties

Drafting technologists perform some or all of the following duties:

- Develop and prepare engineering designs and drawings from preliminary concepts, sketches, engineering calculations, specification sheets and other data
- Operate computer-assisted design (CAD) and drafting workstations
- Develop and prepare design sketches
- Complete documentation packages and produce drawing sets
- Check and verify design drawings to conform to specifications and design data
- Write technical reports
- Prepare contracts and tender documents
- Prepare construction specifications, costs and material estimates
- Supervise and train other technologists, technicians and drafters.

Drafting technicians perform some or all of the following duties:

- Develop and prepare engineering drawings, plans, diagrams or layouts from sketches
- Operate computer-assisted drafting equipment or a conventional drafting station

Employment requirements

- Completion of secondary school is usually required.

- Completion of a two- to three-year college program in engineering design and drafting technology or in a related field is usually required for drafting and design technologists.
- Completion of a one- to two-year college program in drafting
 - or
 - Completion of a three- to four-year apprenticeship program
 - or
- Four to five years of related experience plus completion of college or industry courses in drafting are usually required for drafting technicians.
- Trade certification for draftspersons is available, but voluntary in Ontario.
- Certification in engineering design and drafting technology or in a related field through provincial associations of engineering/applied science technologists and technicians may be required by employers.
- A period of supervised work experience, usually two years, is required before certification.

Additional information

- Mobility is possible to civil, mechanical, electrical or other engineering design technologies through educational or work specialization.
- Senior and supervisory drafting and design technology workers require experience.

2253 Drafting Technologists and Technicians

Classified elsewhere

- Architectural design technologists (in 2251
Architectural Technologists and Technicians)
- Civil engineering design technologists (in 2231
Civil Engineering Technologists and Technicians)
- Electrical and electronics engineering design
technologists (in 2241 *Electrical and Electronics
Engineering Technologists and Technicians*)
- *Industrial Designers* (2252)
- Mechanical engineering design technologists (in
2232 *Mechanical Engineering Technologists and
Technicians*)

2254 Land Survey Technologists and Technicians

Land survey technologists and technicians conduct or participate in surveys to determine the exact locations and relative positions of natural features and other structures on the earth's surface, underground and underwater. They are employed by all levels of government, architectural and engineering firms, and by private sector surveying establishments.

Example titles

engineering survey technologist

geodetic survey technologist

geomatics technologist – surveying

land survey technician

legal survey technician

topographic survey technician

transit operator – surveying

Main duties

Land survey technologists perform some or all of the following duties:

- Assist survey engineers or professional surveyors to develop methods and procedures for conducting field surveys
- Conduct field surveys and operate survey instruments and computer equipment to measure distance, angles, elevations and contours
- Record measurements and other information obtained during field survey activities
- Determine precise geographic locations using global positioning systems (GPS) equipment
- Analyze latitude, longitude and angles and compute trigonometric and other calculations to plot features, contours and areas to a specific scale
- Prepare detailed drawings, charts and plans and survey notes and reports
- Supervise and co-ordinate field survey activities.

Land survey technicians perform some or all of the following duties:

- Participate in field surveys and operate survey instruments and devices
- Keep records, measurements and other survey information in systematic order
- Assist in the calculation, analysis and computation of measurements obtained during field surveys
- Assist in the preparation of detailed drawings, charts and plans.

Land survey technologists and technicians may specialize in one of the following types of surveys: geodetic survey, topographic survey, legal (cadastral) survey or engineering survey.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to three-year college program in geomatics or survey technology is usually required for survey technologists.
- Completion of a one- to two-year college program in geomatics or survey technology is usually required for survey technicians.
- Certification by provincial associations of technicians and technologists may be required by some employers.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- Mobility is possible between the various occupations in this unit group.
- Progression to supervisory positions is possible with experience.
- Progression to land surveyor position is possible with completion of professional surveyor examinations and certification.
- Geomatics is an interdisciplinary field encompassing the collection, analysis and presentation of geographically referenced data.

2254 Land Survey Technologists and Technicians

Classified elsewhere

- *Drafting Technologists and Technicians* (2253)
- Engineering technologists and technicians who apply geotechnical and topographical information to land use and urban planning (in 2231 *Civil Engineering Technologists and Technicians*)
- Geological, geophysical, hydrographic and mine survey technologists (in 2212 *Geological and Mineral Technologists and Technicians*)
- *Land Surveyors* (2154)
- *Mapping and Related Technologists and Technicians* (2255)

2255 Mapping and Related Technologists and Technicians

Mapping and related technologists and technicians gather, analyze, interpret and use geospatial information for applications in natural resources, geology, environment and land use planning. This unit group includes technologists and technicians who design and prepare maps, interpret aerial photographs, operate interpretative and airborne remote sensing equipment, and develop and operate geographical information systems. They are employed by all levels of government, the armed forces, utilities, mapping, computer software, forestry, architectural, engineering and consulting firms and other related establishments.

Example titles

aerial survey technician

mapping technician

cartographer

photogrammetric technologist

cartographic technician

photogrammetrist

geographic information systems (GIS) technician

remote sensing (RS) technician

map editor

softcopy photogrammetrist

Main duties

Cartographic technologists and technicians perform some or all of the following duties:

- Plan map content, format and design and compile required data from aerial photographs, survey notes, records, reports and other maps
- Generate maps and related graphs and charts using digital mapping techniques, computer interactive graphics, computer assisted design and drafting (CAD) software, traditional drafting methods and computer or traditional scribing tools
- Inspect final compositions to ensure completeness and accuracy.

Photogrammetric technologists and technicians perform some or all of the following duties:

- Examine and interpret aerial photographs to prepare topographic maps, aerial-photograph mosaics and related charts
- Operate digitized stereoscopic plotting and computer graphics equipment to provide three-dimensional optical models of terrain, to trace maps, and to prepare charts and tables.

Aerial survey technologists and technicians perform some or all of the following duties:

- Operate airborne remote sensing equipment such as survey film or digital cameras, laser or radar sensors and scanners which produce images of large areas of the earth, coastline, or of the atmosphere
- Monitor recording quality and adjust equipment as required and inspect quality of recorded images.

Remote sensing technologists and technicians perform some or all of the following duties:

- Operate analog or computer-based remote sensing interpretive equipment to prepare images, graphic and alphanumeric reports, maps and charts from airborne or satellite data
- Develop specialized analog and computer software specific routines to customize and integrate image analysis
- Verify the integrity and accuracy of data contained in remote sensing image analysis systems.

Geographic information systems (GIS) technologists and technicians perform some or all of the following duties:

- Operate specialized computer hardware and software and peripheral equipment to model, manage, analyze and display geospatial data
- Develop specialized computer software routines, Internet based GIS, database and business applications to customize geographic information
- Work with external organizations on data transfer and systems compatibility issues
- Perform data entry and editing activities and maintenance operations to systems following pre-determined calibration procedures
- Integrate external software such as spreadsheets and statistical packages with GIS software
- Train and provide technical support for GIS users.

Employment requirements

- Completion of secondary school is required.

2255 Mapping and Related Technologists and Technicians

- Technologists in this unit group require completion of a two- to three-year college program in cartography, photogrammetry, aerial survey, remote sensing, geographic information system or geomatics.
- Technicians in this unit group require completion of a one- to two-year college program in cartography, photogrammetry, aerial survey, remote sensing, geographic information system or geomatics.
- In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.

Additional information

- Geomatics is an interdisciplinary field encompassing the collection, analysis and presentation of geographically referenced data.
- Mobility is possible between some occupations in this unit group.

Classified elsewhere

- Airborne geophysical equipment operators (in 2212 *Geological and Mineral Technologists and Technicians*)
- *Drafting Technologists and Technicians* (2253)
- Engineering technologists and technicians who apply geotechnical and topographical information to land use and urban planning (in 2231 *Civil Engineering Technologists and Technicians*)
- Geomatics engineers and surveying engineers (in 2131 *Civil Engineers*)
- *Land Surveyors* (2154)
- *Land Survey Technologists and Technicians* (2254)

2261 Non-Destructive Testers and Inspectors

Non-destructive testers and inspectors operate radiographic, ultrasonic, liquid penetrant, magnetic particle, eddy current and similar testing equipment to detect discontinuities in objects of various compositions and materials. They are employed by quality control, maintenance and safety departments of manufacturing, processing, transportation, energy and other companies and by private industrial inspection establishments.

Example titles

acoustic emission technician
aircraft non-destructive inspection technician
eddy current technician
industrial radiographer
infrared thermographer
liquid penetrant inspector
magnetic particle inspector
NDT (non-destructive testing) maintenance technician

non-destructive inspector
non-destructive tester
pressure vessel tester
radiographic technician – non-destructive testing
ultrasonic inspector
visual inspector – welding
weld inspector

Main duties

Non-destructive testers and inspectors perform some or all of the following duties:

- Set up and calibrate non-destructive testing equipment
- Conduct tests to ensure quality or detect discontinuities (defects) using ultrasonic, radiographic, liquid penetrant, magnetic particle, eddy current and other non-destructive testing methods
- Establish techniques for proper examination of objects under inspection, ensuring strict adherence to safety regulations
- Interpret radiographs, cathode ray tube (CRT) or digital readouts, conductivity meters and visual indicators
- Apply testing criteria in accordance with applicable specifications or standards and evaluate results
- Organize and report test results
- May perform specialized inspections using acoustic emission, vibration analysis, infrared thermography and laser shearography testing methods
- May instruct and supervise trainees.

- Additional classroom and on-the-job training is required for certification in non-destructive testing.
- Non-destructive testing certification by Natural Resources Canada is available in three levels and is usually required by employers.
- Industrial radiographers using a radioactive isotope must pass an examination to be recognized as a certified exposure device operator by the Canadian Nuclear Safety Commission.
- Welding inspector certification by the Canadian Welding Bureau is available in three levels and may be required by employers.
- Boiler and pressure vessel, process pipeline and above-ground storage tank inspector certification is available from the American Petroleum Institute.

Classified elsewhere

- *Engineering Inspectors and Regulatory Officers (2262)*
- Radiographic or ultrasonic equipment operating occupations in medical laboratories or hospitals (in 321 *Medical Technologists and Technicians (Except Dental Health)*)

Employment requirements

- Completion of secondary school is required.
- Completion of two years of an approved post-secondary science or engineering program may be required.

2262 Engineering Inspectors and Regulatory Officers

Engineering inspectors and regulatory officers inspect transportation vehicles such as aircraft, watercraft, automobiles and trucks and weighing and measuring devices such as scales and meters as well as industrial instruments, processes and equipment for conformity to government and industry standards and regulations. They are employed by government agencies and in the private sector.

Example titles

airworthiness inspector	inspector, weights and measures
elevator inspector	insurance loss prevention inspector
engineering inspector	marine damage surveyor
inspector, air carrier maintenance	motor vehicle defects investigator
inspector, air transport	railway accident investigation officer
inspector, electricity and gas meters	regulatory officer, engineering

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Motor vehicles defects investigators conduct motor vehicle and motor vehicle component defect investigations, examinations, tests and defect-related accident investigations; provide expert advice and testimony on specific motor vehicle performance problems or defects and recommend improvements in vehicle inspection and licensing procedures and vehicle safety standards.
- Railway accident investigation officers collect and analyze data from train derailments, collisions, and other accidents to determine the causes and inspect and evaluate railway property, structures, rolling stock, signals, track structure and train handling characteristics to ensure compliance to operating standards.
- Airworthiness inspectors conduct initial and regular inspections of establishments and individuals holding or applying for air carrier operating certificates and establishments engaged in aircraft maintenance, repair or modification; inspect aircraft, advise of any deficiencies and detain aircraft suspected of being unairworthy or unsafe.
- Inspectors, weights and measures conduct inspections and tests of a variety of mechanical and electronic weighing and measuring devices and systems; prepare draft investigative reports of findings and recommend corrective or enforcement action.

Employment requirements

- University degree or college diploma in an appropriate engineering field
 - or
 - Trade qualifications and extensive related work experience are required.
- Appropriate professional engineering or engineering technology certification and licences may be required.

Classified elsewhere

- *Construction Inspectors* (2264)
- *Inspectors in Public and Environmental Health and Occupational Health and Safety* (2263)

2263 Inspectors in Public and Environmental Health and Occupational Health and Safety

Inspectors in this unit group evaluate and monitor health and safety hazards and develop strategies to control risks in the workplace. They inspect restaurants, public facilities, industrial establishments, municipal water systems and other workplaces to ensure compliance with government regulations regarding sanitation, pollution control, the handling and storage of hazardous substances and workplace safety. They are employed throughout the private and public sectors.

Example titles

environmental health officer
hazardous waste inspector
health and safety officer
health standards inspector
occupational health and safety officer
pollution control inspector

public health inspector
restaurant inspector
rodent control inspector
supervisor, public health inspectors
water inspector

Main duties

Inspectors in this unit group perform some or all of the following duties:

- Inspect the sanitary conditions of restaurants, hotels, schools, hospitals and other public facilities or institutions
- Conduct surveys and monitoring programs of the natural environment to identify sources of pollution
- Collect samples of water for analysis; measure physical, biological and chemical workplace hazards; and conduct safety and environmental audits
- Investigate health and safety related complaints, spills of hazardous chemicals, outbreaks of diseases or poisonings and workplace accidents
- Inspect workplaces to ensure that equipment, materials and production processes do not present a safety or health hazard to employees or to the general public
- Develop, implement and evaluate health and safety programs and strategies
- Initiate enforcement procedures to fine or to close an establishment contravening municipal, provincial or federal regulations
- Provide consultation and deliver training programs to employers, employees and the general public on issues of public health, environmental protection or workplace safety.

- In some establishments, several years of related work experience and the completion of in-house training courses may substitute for formal education.
- Public health inspectors employed outside Quebec require certification with the Canadian Institute of Public Health Inspectors.
- Occupational health and safety officers may require certification with the Association for Canadian Registered Safety Professionals.

Classified elsewhere

- *By-Law Enforcement and Other Regulatory Officers, n.e.c. (6463)*
- *Construction Inspectors (2264)*
- *Engineering Inspectors and Regulatory Officers (2262)*
- *Occupational hygienists and ergonomists (in 4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers)*

Employment requirements

- A bachelor's degree or college diploma in a discipline such as food science, environmental studies, chemistry or health and safety is usually required.

2264 Construction Inspectors

Construction inspectors inspect the construction and maintenance of new and existing buildings, bridges, highways and industrial construction to ensure that specifications and building codes are observed and monitor work site safety. They are employed by federal, provincial and municipal governments, construction companies, architectural and civil engineering consulting firms or they may be self-employed.

Example titles

bridge inspector
building construction inspector
construction inspector
highway construction inspector
home inspector

housing construction inspector
mine inspector, construction
plumbing inspector
pre-stressed concrete inspector
safety officer – construction

Main duties

Construction inspectors perform some or all of the following duties:

- Examine plans, drawings, and site layouts for new buildings, building renovations and other proposed structures
- Inspect construction of buildings, bridges, dams, highways and other types of building and engineering construction for conformance to drawings, specifications, building codes or other applicable ordinances
- Inspect and test electrical or plumbing installations in buildings to ensure compliance with municipal, provincial and federal regulations
- Inspect steel framework, concrete forms, reinforcing steel mesh and rods, concrete or pre-stressed concrete to ensure quality standards and to verify conformance to specifications and building codes
- Inspect construction of sewer systems and pipelines
- Inspect construction sites to ensure that safe working conditions are maintained
- Inspect existing buildings to identify and report on structural defects, fire hazards and other threats to safety
- Inspect new or resale homes on behalf of clients and assess and provide reports on the physical condition of property.

- College diploma in construction, civil engineering or architectural technology plus several years of related work experience
or
Several years of experience as a qualified tradesperson in a construction trade, such as plumbing, carpentry or electrical trade are required.
- Provincial certification in a skilled trade or as an engineering technologist is usually required.

Additional information

- Progression to construction management positions is possible with experience.

Classified elsewhere

- *By-Law Enforcement and Other Regulatory Officers, n.e.c.* (6463)
- *Construction Estimators* (2234)
- *Construction Managers* (0711)
- *Engineering Inspectors and Regulatory Officers* (2262)
- *Inspectors in Public and Environmental Health and Occupational Health and Safety* (2263)

Employment requirements

- Completion of secondary school is required.

2271 Air Pilots, Flight Engineers and Flying Instructors

Pilots fly fixed wing aircraft and helicopters to provide air transportation and other services. Flight engineers (second officers) monitor the functioning of aircraft during flight and may assist in flying aircraft. Flying instructors teach flying techniques and procedures to student and licensed pilots. Air pilots, flight engineers and flight instructors are employed by airline and air freight companies, flying schools, the armed forces and by other public and private sector aircraft operators.

Example titles

air pilot
captain – air transport
check pilot
chief flying instructor
chief pilot
co-pilot
flight engineer

flying instructor
helicopter pilot
military pilot
pilot instructor
second officer – air transport
test pilot

Main duties

Pilots perform some or all of the following duties:

- Fly fixed wing aircraft or helicopters to transport passengers and freight
- Provide services such as search and rescue, aerial surveying or spraying and crop dusting
- Direct activities of aircraft crew during flight, as captain of aircraft
- Co-pilot aircraft and perform captain's duties if required, as first officer
- Test new aircraft to evaluate aircraft performance
- Train pilots to use new equipment, or prepare them for examination to re-validate or upgrade existing licences.

Flight engineers (second officers) perform some or all of the following duties:

- Monitor operation of engines, fuel consumption and functioning of aircraft systems during flight
- Assist captain and first officer in operation of aircraft as second officer.

Flying instructors perform some or all of the following duties:

- Instruct student pilots in procedures and techniques of flying aircraft and in ground-school subjects such as navigation, radio procedures and flying regulations
- Train licensed pilots for additional certification.

- A commercial pilot's licence or an air transport pilot's licence is required.
- Additional licences or endorsements to fly different types of aircraft are required.
- A university degree or college diploma may be required.
- Structured training is provided by employers.

Flight instructors

- Completion of secondary school and graduation from a certified flying or aviation school are required.
- A commercial pilot's or an air transport pilot's licence is required.
- Transport Canada ratings and endorsements to provide instruction on different types of aircraft are required.
- A university degree or college diploma may be required.

Classified elsewhere

- *Air Traffic Control and Related Occupations* (2272)
- Ground school instructors (in 4131 *College and Other Vocational Instructors*)

Employment requirements

Pilots and flight engineers

- Completion of secondary school and graduation from a certified flying or aviation school are required.

2272 Air Traffic Control and Related Occupations

Air traffic controllers direct air traffic within assigned airspace, and control moving aircraft and service vehicles at airports. Flight dispatchers authorize airline flights over assigned routes. Flight service specialists provide pilots with flight information essential to aviation safety. Air traffic controllers and flight service specialists are employed by NAV Canada and the armed forces. Flight dispatchers are employed by airline and air services companies and by the armed forces.

Example titles

airport air traffic controller
air traffic controller (ATC)
enroute air traffic controller

flight dispatcher
flight service specialist (FSS)
terminal air traffic controller

Main duties

Air traffic controllers perform some or all of the following duties:

- Control flow of air traffic within assigned airspace using radar monitors, radio and other communication equipment and visual references
- Issue aircraft takeoff and landing instructions to pilots and relay meteorological, navigational and other information to pilots in flight
- Maintain radio and telephone contact with adjacent control towers, terminal control units and other area control centres, and co-ordinate movement of aircraft into adjoining areas
- Alert airport emergency services when aircraft are experiencing difficulties and report missing aircraft to search and rescue services
- Direct activities of all moving aircraft and service vehicles on or near airport runways.

Flight dispatchers perform some or all of the following duties:

- Analyze environmental conditions and assess aircraft for load and fuel capacity and other factors to determine flight routes
- Brief flight crew before takeoff on weather conditions, status of navigational facilities and airports en route
- Co-sign flight authorization with aircraft captain
- Monitor progress of flight and communicate as required with aircraft during flight
- Delay or cancel flights if conditions warrant
- Prepare and maintain flight plans, flight logs and other reports.

Flight service specialists perform some or all of the following duties:

- Provide pre-flight information concerning current and forecast weather conditions, radio frequencies, terrain, airports and related data to assist pilots in preparation of flight plans
- Check flight plans for completeness and accuracy and forward flight plans to air traffic services facility
- Respond to radio calls from aircraft preparing for takeoff or landing and supply information such as weather conditions, wind speed and direction and presence of local air traffic
- Support air traffic control operations by relaying radio requests for flight clearances, arrival and departure information and position reports
- Alert airport emergency services of aircraft experiencing difficulties and initiate communication searches when aircraft become overdue
- Observe, record and report weather conditions at airports.

Employment requirements

- Completion of secondary school is required.
- A basic radio telephone operator's licence is required.
- Air traffic controllers and flight service specialists require completion of a NAV Canada training program which includes structured in-class and on-the-job training.
- Air traffic controllers require an air traffic controller's licence.
- Flight dispatchers may require experience in air traffic control or flight operations and may require a private pilot's licence.

2272 Air Traffic Control and Related Occupations

Additional information

- Air traffic controllers with experience and appropriate NAV Canada endorsements may move to units with higher volumes of air traffic.

Classified elsewhere

- *Railway Traffic Controllers and Marine Traffic Regulators (2275)*

2273 Deck Officers, Water Transport

Deck officers, water transport, operate ships or self-propelled vessels to transport passengers and cargo on oceans and coastal and inland waters, and supervise and co-ordinate the activities of deck crews. This unit group also includes Canadian Coast Guard deck officers. They are employed by marine transportation companies and federal government departments including the armed forces.

Example titles

deck officer	ship pilot
ferryboat master	ship's captain
first mate, ship	ship's mate
maritime surface and sub-surface officer – military	third mate, ship
master mariner	tugboat captain
navigation officer, Coast Guard vessel	watchkeeping officer, Coast Guard vessel
second mate, ship	

Main duties

Deck officers perform some or all of the following duties:

- Command and operate ships or other self-propelled vessels, such as barges or oil rigs, to transport passengers and cargo
- Command and operate coast guard vessels to provide ice breaking and search and rescue services and to maintain control over ships operating in Canadian waters
- Board vessels at berth or from pilot boat to advise ships' captains on the course to steer for safe passage into and out of port, seaway or other waterway under pilotage authority
- Plan and execute safe navigational passage using navigational aids
- Determine geographical position using navigational instruments, maps and charts
- Guide vessels in rivers, canals, and other confined or hazardous waters and waterways
- Maintain vessel's navigational instruments and equipment
- Direct and oversee loading and unloading of cargo
- Supervise and co-ordinate activities of deck crews
- Record vessel's progress, crew's activities, weather and sea conditions on ship's log.

Employment requirements

- Completion of secondary school is required.

- Completion of deck officer cadet program from an approved nautical institute
or
One to three years of experience as a member of a deck crew are required.
- Deck officer certificate of competency, issued by Transport Canada, is required.
- For ship pilots, a ship pilot licence and a master certificate of competency are required.

Additional information

- Transport Canada administers a deck officer certification program, consisting of several levels. Progression from one level of certification to the next requires additional experience, training and testing.
- Mobility between employers is possible for positions requiring the same level of certification.
- Progression to management positions in transportation is possible with experience.

Classified elsewhere

- *Deck Crew, Water Transport* (7433)
- *Engine Officers, Water Transport* (2274)
- *Engine Room Crew, Water Transport* (7434)
- *Fishing Masters and Officers* (8261)
- *Shore captains* (in 0713 *Transportation Managers*)

2274 Engineer Officers, Water Transport

Engineer officers, water transport, operate and maintain main engines, machinery and auxiliary equipment aboard ships and other self-propelled vessels and supervise and co-ordinate the activities of engine room crews. They are employed by marine transportation companies and federal government departments including the armed forces.

Example titles

chief engineer – water transport
engineer officer – water transport
fourth engineer
marine engineer officer

marine engineer officer – military
second engineer
third engineer
tugboat engineer

Main duties

Engineer officers, water transport, perform some or all of the following duties:

- Operate main engines, machinery and all auxiliary equipment aboard ships, such as boilers, steering and deck machinery, motors, pumps, generators and condensers
- Stand engine room watch, monitoring and noting performance of engines, machinery and all auxiliary equipment
- Inspect and conduct maintenance and emergency repair to engines, machinery and all auxiliary equipment
- Supervise and co-ordinate activities of engine room crew
- Maintain records and prepare reports on engine performance and failures.

Employment requirements

- Completion of secondary school is required.
- Completion of a three-year cadet program in marine engineering from an approved marine training institute

or

Approximately three years of experience as an engine room crew member and six months of formal training at an approved marine training institute

or

Approximately three years of experience as an engine mechanic and six months of experience as an engine room crew member are required for certification as a fourth class marine engineer.

- A marine engineer officer certificate of competency, issued by Transport Canada, is required.

Additional information

- Fourth Class Marine Engineer certificate is the entry level of a four-level certification program administered by Transport Canada. Progression from one level of certification to the next requires additional experience, training and testing.
- Mobility between employers is possible for positions requiring the same level of certification.
- Progression to management positions in transportation is possible with experience.

Classified elsewhere

- *Deck Crew, Water Transport* (7433)
- *Deck Officers, Water Transport* (2273)
- *Engine Room Crew, Water Transport* (7434)
- Marine and naval engineers (in 2148 *Other Professional Engineers, n.e.c.*)
- Marine mechanical engineers (in 2132 *Mechanical Engineers*)
- *Transportation Managers* (0713)

2275 Railway Traffic Controllers and Marine Traffic Regulators

Railway traffic controllers co-ordinate passenger and freight train traffic on railways. They are employed by rail transport companies. Marine traffic regulators monitor and regulate coastal and inland marine traffic within assigned waterways. They are employed by port, harbour, canal and lock authorities and by the Canadian Coast Guard.

Example titles

chief rail traffic controller
marine traffic regulator

rail traffic controller
train operator

Main duties

Railway traffic controllers perform some or all of the following duties:

- Operate and monitor centralized traffic control systems to co-ordinate and follow railway traffic
- Chart train movements, calculate arrival and departure times and record rail traffic information
- Issue instructions to control the movement of passenger and freight train traffic and on-track mobile maintenance equipment
- Receive, record and relay train instructions to train crew by hand or radio telephone
- May supervise and train other railway traffic controllers.

Marine traffic regulators perform some or all of the following duties:

- Direct and monitor vessel movements using radar or closed circuit monitors, remote radio systems and other telecommunication equipment
- Obtain position, course, speed and estimated arrival time of vessels and monitor vessel progress through traffic zone
- Issue clearance instructions to vessels, advise vessels of traffic volumes and weather conditions, and relay information to next marine traffic control sector
- Report accidents, distress signals, navigational hazards and other emergencies to authorities
- Maintain radio and telephone contact with adjacent marine control sectors and with vessels within area of jurisdiction
- Maintain log of vessel movements, size and structure.

Employment requirements

- Railway traffic controllers usually require completion of secondary school and several years of experience in the railway industry.

- Up to 35 weeks of classroom and on-the-job training is provided for railway traffic controllers.
- Railway traffic controllers require a Canadian Rail Operating Rules certificate.
- Marine traffic regulators require completion of secondary school and several months of formal traffic regulator training.

Additional information

- There is little mobility between traffic controlling occupations in the railway and marine sectors.
- With experience, railway traffic controllers may progress to supervisory positions in rail transport operations.

Classified elsewhere

- Harbour masters (in 0721 *Facility Operation and Maintenance Managers*)
- Subway traffic controllers and light rail transit dispatchers (in 7222 *Supervisors, Motor Transport and Other Ground Transit Operators*)
- *Supervisors, Railway Transport Operations* (7221)

2281 Computer Network Technicians

Computer network technicians establish, operate, maintain, and co-ordinate the use of local and wide area networks (LANs and WANs), mainframe networks, hardware, software and related computer equipment. They set up and maintain Internet and Intranet Web sites and Web-server hardware and software, and monitor and optimize network connectivity and performance. They are employed in information technology units throughout the private and public sectors. Supervisors of computer network technicians are included in this group.

Example titles

computer network technician
computer network technician supervisor
data centre operator
Internet Web site technician
LAN (local area network) administrator
LAN (local area network) technician

network administrator
network support technician
supervisor, computer network technician
system administrator
Web technician

Main duties

Computer network technicians perform some or all of the following duties:

- Maintain, troubleshoot and administer the use of local area networks (LANs), wide area networks (WANs), mainframe networks, computer workstations, connections to the Internet and peripheral equipment
- Evaluate and install computer hardware, networking software, operating system software and software applications
- Operate master consoles to monitor the performance of computer systems and networks and to co-ordinate access and use of computer networks
- Provide problem-solving services to network users
- Install, maintain, troubleshoot and upgrade Web-server hardware and software
- Implement network traffic and security monitoring software, and optimize server performance
- Perform routine network start up and close down and maintain control records
- Perform data backups and disaster recovery operations
- Conduct tests and perform security and quality controls
- Control and monitor e-mail use, Web navigation, and installed softwares
- Perform shell scripting or other basic scripting tasks
- May supervise other workers in this group.

Employment requirements

- Completion of a college or other program in computer science, network administration, Web technology or a related field is usually required.
- Certification or training provided by software vendors may be required by some employers.

Additional information

- Progression to computer programming, interactive media development, Web development or systems analysis is possible with experience.

Classified elsewhere

- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Sales, Marketing and Advertising Managers* (0611)
- *Systems Testing Technicians* (2283)
- *User Support Technicians* (2282)
- *Web Designers and Developers* (2175)

2282 User Support Technicians

Technicians in this group provide first-line technical support to computer users experiencing difficulties with computer hardware and with computer applications and communications software. They are employed by computer hardware manufacturers and retailers, software developers, in call centres and in information technology units throughout the private and public sectors. Technicians in this group are also employed by independent technical companies or they may be self-employed.

Example titles

call centre agent – technical support
client support representative – systems
computer help desk representative – systems
computer help desk supervisor
hardware installation technician
hardware technical support analyst
help desk technician

software installation technician
software technical support analyst
systems support representative
technical support analyst – systems
technical support supervisor
user support technician

Main duties

User support technicians perform some or all of the following duties:

- Communicate electronically and in person with computer users experiencing difficulties to determine and document problems experienced
- Consult user guides, technical manuals and other documents to research and implement solutions
- Emulate or reproduce technical problems encountered by users
- Provide advice and training to users in response to identified difficulties
- Provide business systems, network and Internet support to users in response to identified difficulties
- Collect, organize and maintain a problems and solutions log for use by other technical support analysts
- Participate in the redesign of applications and other software
- May supervise other technical support workers in this group.

Employment requirements

- Completion of a college program in computer science, computer programming or network administration is usually required.
- College or other courses in computer programming or network administration are usually required.
- Certification or training provided by software vendors may be required by some employers.

Additional information

- Progression to computer programming, interactive media development, Web development or systems analysis is possible with experience.

Classified elsewhere

- *Computer Network Technicians* (2281)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Information Systems Analysts and Consultants* (2171)
- *Systems Testing Technicians* (2283)

2283 Systems Testing Technicians

Systems testing technicians execute test plans to evaluate the performance of software applications and information and telecommunications systems. They are employed in information technology units throughout the private and public sectors.

Example titles

application tester
application testing technician
software test co-ordinator
software tester

systems tester
systems testing technician
user acceptance tester

Main duties

Systems testing technicians perform some or all of the following duties:

- Develop and document software testing plans
- Install software and hardware and configure operating system software in preparation for testing
- Execute, analyze and document results of software application tests and information and telecommunication systems tests
- Develop and implement software and information system testing policies, procedures and scripts.

Employment requirements

- Completion of a college program in computer science, computer programming or network administration is usually required.
- College or other courses in computer programming or network administration are usually required.
- Certification or training provided by software vendors may be required by some employers.

Additional information

- Progression to computer programming, interactive media development, Web development or systems analysis is possible with experience.

Classified elsewhere

- *Computer Engineers (Except Software Engineers and Designers)* (2147)
- *Computer Network Technicians* (2281)
- *Computer Programmers and Interactive Media Developers* (2174)
- *Information Systems Analysts and Consultants* (2171)
- *Software Engineers and Designers* (2173)
- *User Support Technicians* (2282)
- *Web Designers and Developers* (2175)

HEALTH OCCUPATIONS

Major Group 31

PROFESSIONAL OCCUPATIONS IN HEALTH

311 Physicians, Dentists and Veterinarians

- 3111 Specialist Physicians
- 3112 General Practitioners and Family Physicians
- 3113 Dentists
- 3114 Veterinarians

312 Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals

- 3121 Optometrists
- 3122 Chiropractors
- 3123 Other Professional Occupations in Health Diagnosing and Treating

313 Pharmacists, Dietitians and Nutritionists

- 3131 Pharmacists
- 3132 Dietitians and Nutritionists

314 Therapy and Assessment Professionals

- 3141 Audiologists and Speech-Language Pathologists
- 3142 Physiotherapists
- 3143 Occupational Therapists
- 3144 Other Professional Occupations in Therapy and Assessment

315 Nurse Supervisors and Registered Nurses

- 3151 Head Nurses and Supervisors
- 3152 Registered Nurses

Major Group 32

TECHNICAL AND SKILLED OCCUPATIONS IN HEALTH

321 Medical Technologists and Technicians (Except Dental Health)

- 3211 Medical Laboratory Technologists and Pathologists' Assistants
- 3212 Medical Laboratory Technicians
- 3213 Veterinary and Animal Health Technologists and Technicians
- 3214 Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists
- 3215 Medical Radiation Technologists
- 3216 Medical Sonographers
- 3217 Cardiology Technologists
- 3218 Electroencephalographic and Other Diagnostic Technologists, n.e.c.
- 3219 Other Medical Technologists and Technicians (Except Dental Health)

322 Technical Occupations in Dental Health Care

- 3221 Denturists
- 3222 Dental Hygienists and Dental Therapists
- 3223 Dental Technologists, Technicians and Laboratory Bench Workers

323 Other Technical Occupations in Health Care (Except Dental)

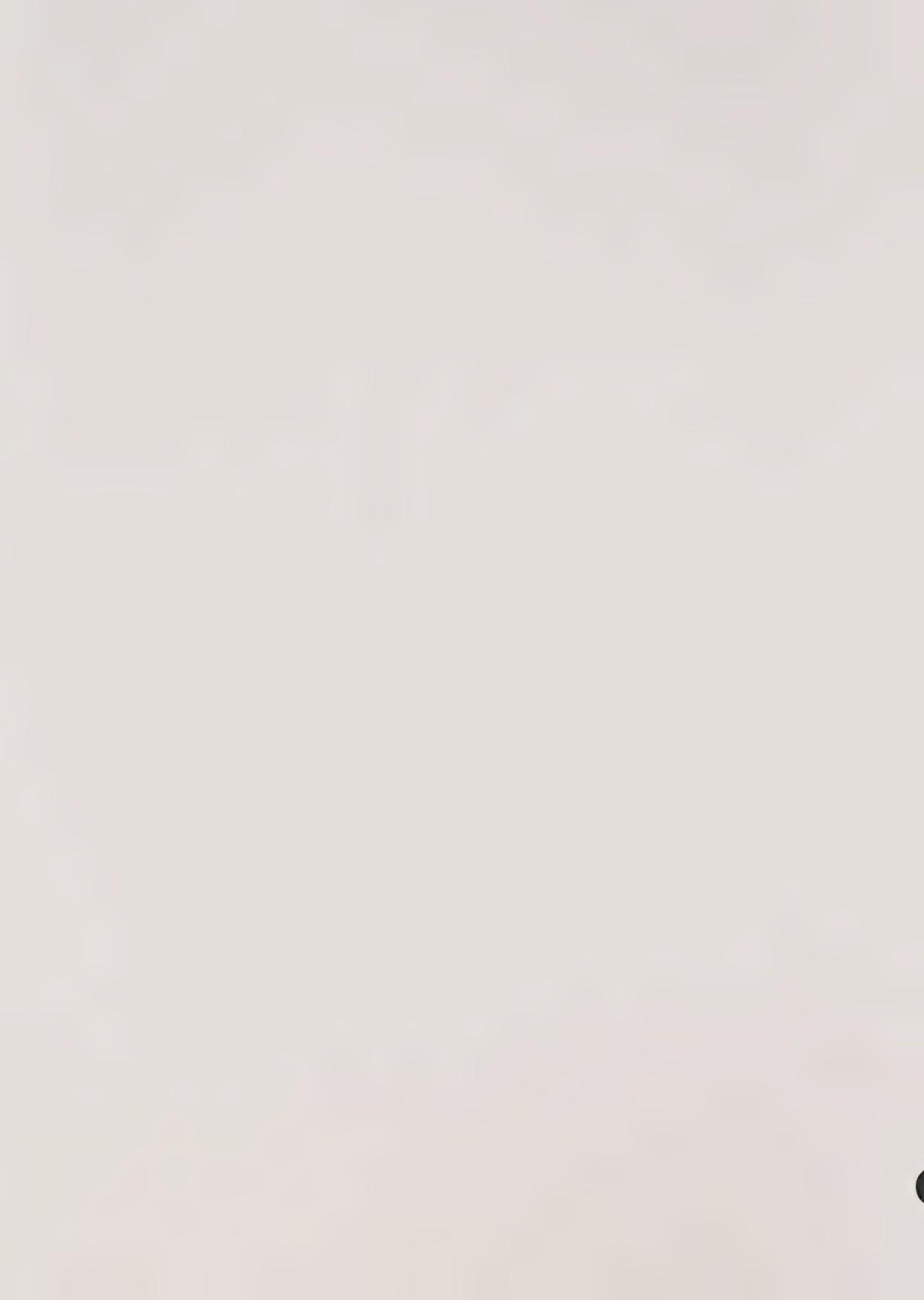
- 3231 Opticians
- 3232 Midwives and Practitioners of Natural Healing
- 3233 Licensed Practical Nurses
- 3234 Ambulance Attendants and Other Paramedical Occupations
- 3235 Other Technical Occupations in Therapy and Assessment

Major Group 34

ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES

341 Assisting Occupations in Support of Health Services

- 3411 Dental Assistants
- 3413 Nurse Aides, Orderlies and Patient Service Associates
- 3414 Other Assisting Occupations in Support of Health Services



3111 Specialist Physicians

This unit group includes specialist physicians in clinical medicine, in laboratory medicine and in surgery. Specialists in clinical medicine diagnose and treat diseases and physiological or psychiatric disorders and act as consultants to other physicians. Specialists in laboratory medicine study the nature, cause and development of diseases in humans. Specialists in surgery perform and supervise surgical procedures. Specialists in clinical medicine usually work in private practice or in a hospital while those in laboratory medicine and in surgery usually work in hospitals. Residents in training to become specialist physicians are included in this unit group.

Example titles

Specialists in clinical medicine

anesthetist
cardiologist
clinical immunologist-allergist
dermatologist
diagnostic radiologist
emergency physician
endocrinologist
gastroenterologist
geriatrician
hematologist
nephrologist
neurologist
oncologist
orthopedist
pediatrician
physiatrist
pneumologist
psychiatrist
radiation oncologist
respirologist
rheumatologist

Specialists in laboratory medicine

anatomical pathologist
general pathologist
hematopathologist
medical biochemist – medicine
medical microbiologist
neuropathologist

Specialists in surgery

cardiac surgeon
general surgeon
neurosurgeon
obstetrician-gynecologist
ophthalmologist
orthopedic surgeon
otolaryngologist
otorhinolaryngologist
pediatric surgeon
plastic surgeon
thoracic surgeon
urologist
vascular surgeon

Main duties

Specialists in clinical medicine perform some or all of the following duties:

- Diagnose and treat diseases and physiological or psychiatric disorders
- Order laboratory tests, X-rays and other diagnostic procedures
- Prescribe medication and treatment and refer patients for surgery
- Act as consultants to other physicians
- May conduct medical research.

Specialists in laboratory medicine perform some or all of the following duties:

- Study the nature, cause and development of diseases in humans and the structural and functional changes caused by diseases
- Conduct microscopic and chemical analyses of laboratory samples and specimens

- Supervise laboratory activities

- Act as consultants to other physicians.

Specialists in surgery perform some or all of the following duties:

- Assess patients' diseases or disorders to determine appropriate surgical procedures
- Perform and supervise surgical procedures to correct physical abnormalities and deficiencies and repair injuries
- Act as consultants to other physicians.

Employment requirements

Specialist physicians

- A bachelor of science degree

or

In Quebec, completion of a college program and one year of pre-medicine university studies is usually required.

3111 Specialist Physicians

- Graduation from an approved medical school and specific specialty training are required.
- Completion of the certifying examinations of the Royal College of Physicians and Surgeons of Canada
and
Licensing by the provincial or territorial licensing authority are required.

Specialists in clinical medicine

- Four to five years of specialty residency training are required.
- Two years of subspecialty training may also be required.

Specialists in laboratory medicine

- Four to five years of specialty residency training are required.

Specialists in surgery

- Five to six years of specialty residency training are required.
- Two years of subspecialty training may also be required.

Additional information

- Progression to management positions, such as director of laboratory medicine or chief of surgery, is possible with experience.

Classified elsewhere

- *Chiropractors* (3122)
- *General Practitioners and Family Physicians* (3112)
- *Managers in Health Care* (0311)
- Naturopathic physicians and osteopathic physicians (in 3123 *Other Professional Occupations in Health Diagnosing and Treating*)

3112 General Practitioners and Family Physicians

General practitioners and family physicians diagnose and treat the diseases, physiological disorders and injuries of patients. They provide primary contact and continuous care toward the management of patients' health. They usually work in private practice, including group or team practices, hospitals and clinics. Residents in training to be general practitioners and family physicians are included in this unit group.

Example titles

family physician
general practitioner (GP)

medical doctor
resident, general practice

Main duties

General practitioners and family physicians perform some or all of the following duties:

- Examine patients and take their histories, order laboratory tests, X-rays and other diagnostic procedures and consult with other medical practitioners to evaluate patients' physical and mental health
- Prescribe and administer medications and treatments
- Perform and assist in routine surgery
- Provide emergency care
- Provide acute care management
- Inoculate and vaccinate patients
- Deliver babies and provide pre-natal and post-natal care
- Advise patients and their families on health care including health promotion, disease, illness and accident prevention
- Provide counselling and support to patients and their families on a wide range of health and lifestyle issues
- Perform patient advocacy role
- Co-ordinate or manage primary patient care
- Provide continuous care to patients
- Supervise home care services
- Report births, deaths, and contagious and other diseases to governmental authorities.

- Completion of the qualifying examinations of the Medical Council of Canada
and
Licensing by the provincial or territorial licensing authority are required.

Additional information

- General practitioners and family physicians may become specialist physicians with additional training.

Classified elsewhere

- *Chiropractors* (3122)
- Naturopathic physicians and osteopathic physicians (in 3123 *Other Professional Occupations in Health Diagnosing and Treating*)
- *Specialist Physicians* (3111)

Employment requirements

- A bachelor's degree
or
In Quebec, completion of a college program and one year of pre-medicine university studies is usually required.
- Graduation from an approved medical school
and
Two to three years of family medicine residency training are required.

3113 Dentists

Dentists diagnose, treat, prevent and control disorders of the teeth and mouth. They work in private practice or may be employed in hospitals, clinics, public health facilities or universities.

Example titles

dentist	orthodontist
endodontist	pediatric dentist
oral and maxillofacial surgeon	periodontist
oral pathologist	prosthodontist
oral radiologist	public health dentist

Main duties

Dentists perform some or all of the following duties:

- Examine patients' teeth, gums and surrounding tissue to diagnose disease, injury and decay and plan appropriate treatment
- Restore, extract and replace diseased and decayed teeth
- Perform oral surgery, periodontal surgery and other treatments
- Clean teeth and instruct patients on oral hygiene
- Design bridgework, fit dentures and provide appliances to correct abnormal positioning of the teeth and jaws, or write fabrication instructions or prescriptions for use by denturists and dental technicians
- Supervise dental hygienists, dental assistants and other staff.

Dentists may specialize in such areas as oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontics, endodontics, prosthodontics, oral pathology, oral radiology or public health dentistry.

Employment requirements

- One to four years of pre-dentistry university studies, or, in Quebec, completion of a college program in sciences
and
A university degree from a recognized dental program are required.
- Licensing by a provincial or territorial regulatory body is required.
- Dentists in general practice can move into a specialized practice through advanced training.
- Licensing for specializations is required.

Additional information

- Certification by the National Dental Examining Board of Canada entitles dentists or graduates of approved dental programs to practise dentistry in any province in Canada provided requirements set out by the provincial and territorial licensing authorities are met.

Classified elsewhere

- *Dental Assistants (3411)*
- *Dental Hygienists and Dental Therapists (3222)*
- *Dental Technologists, Technicians and Laboratory Bench Workers (3223)*
- *Denturists (3221)*

3114 Veterinarians

Veterinarians prevent, diagnose and treat diseases and disorders in animals and advise clients on the feeding, hygiene, housing and general care of animals. Veterinarians work in private practice or may be employed by animal clinics and laboratories, government or industry.

Example titles

small animal veterinary specialist
veterinarian
veterinary inspector

veterinary pathologist
veterinary physiologist
zoo veterinarian

Main duties

Veterinarians perform some or all of the following duties:

- Diagnose diseases or abnormal conditions in animals through physical examinations or laboratory tests
- Treat sick or injured animals by prescribing medication, setting bones, dressing wounds or performing surgery
- Perform routine, emergency and post-mortem examinations
- Inoculate animals to prevent diseases
- Provide obstetrical and dental services
- Advise clients on feeding, housing, breeding, hygiene and general care of animals
- Provide euthanasia services
- May supervise animal health technologists and animal care workers
- May be responsible for overall operation of animal hospital, clinic or mobile service to farms
- May conduct veterinary research
- May enforce government regulations in disease control and food production including animal or animal-based food inspection.

Employment requirements

- Two to four years of pre-veterinary university studies or, in Quebec, completion of a college program in health science
and
A four-year university degree in veterinary medicine
and
Completion of national certification examinations are required.
- Provincial licensing is required.
- Entry into research positions may require post-graduate study.

Additional information

- The duties of veterinarians performing research may be similar to those of some biologists.

Classified elsewhere

- *Biologists and Related Scientists (2121)*
- *Veterinary and Animal Health Technologists and Technicians (3213)*

3121 Optometrists

Optometrists examine eyes, prescribe and fit eyeglasses and contact lenses and recommend treatments such as exercises to correct vision problems or ocular disorders. They work in private practice, clinics and community health centres.

Example titles

doctor of optometry

optometrist

Main duties

Optometrists perform some or all of the following duties:

- Examine patients' eyes, conduct tests and use ophthalmoscopes, biomicroscopes and other specialized instruments to determine visual efficiency
- Prescribe treatment (excluding surgery) to conserve, improve and correct vision and other ocular disorders
- Prescribe and fit eyeglasses and contact lenses, educate and counsel patients on contact lens use and care, visual hygiene, lighting arrangements, working distances and safety factors
- Refer patients to ophthalmologists or other physicians and surgeons for treatment of ocular or other diseases or conditions.

Optometrists may specialize in fitting visual aids for people who are partially blind, fitting contact lenses or correcting special vision problems.

Employment requirements

- One to three years of college or university, with a concentration in mathematics and science courses
and
A four-year university program in optometry are required.
- Licensing by the provincial or territorial regulatory governing body is required.

Classified elsewhere

- Ophthalmologists (in 3111 *Specialist Physicians*)
- *Opticians* (3231)
- Orthoptists (in 3123 *Other Professional Occupations in Health Diagnosing and Treating*)

3122 Chiropractors

Chiropractors diagnose and treat patients' neuromuscular-skeletal disorders of the spine and other body joints by adjusting the spinal column or through other corrective manipulation. Chiropractors are usually in private practice or in clinics with other health practitioners.

Example titles

chiropractic doctor
chiropractor

doctor of chiropractic

Main duties

Chiropractors perform some or all of the following duties:

- Take patient's case history, conduct examination, observe patient and perform X-rays and other tests to diagnose patient's condition
- Diagnose neuromuscular-skeletal disorders of the spinal column, pelvis, extremities and associated tissues
- Treat health disorders in a natural manner through adjustments or articular manipulations and complementary treatments such as electrotherapy, nutrition, light and massage with special attention given to the spine
- Advise patients on corrective exercises, posture, lifestyle and nutrition
- Refer patients for medical care when appropriate.

Employment requirements

- A minimum of two years of university undergraduate studies in sciences
and

Completion of a four- or five-year program at an institution accredited by the Accreditation Commission of the Council on Chiropractic Education
and

Completion of the examinations of the Canadian Chiropractic Examining Board and of the provincial licensing body are required.

- Licensure by a regulatory body is required in all provinces and in the Yukon.

Classified elsewhere

- Chiropractic aides (in 3414 *Other Assisting Occupations in Support of Health Services*)

3123 Other Professional Occupations in Health Diagnosing and Treating

This unit group includes health professionals who diagnose and treat the diseases and injuries of patients and who are not elsewhere classified. This includes doctors of podiatric medicine, chiropodists and podiatrists, naturopaths, orthoptists and osteopaths. They work in private practices, clinics and hospitals.

Example titles

chiropodist	naturopathic doctor (ND)
doctor of osteopathy	orthoptist
doctor of podiatric medicine (D.P.M.)	osteopath
foot specialist	osteopathic physician
naturopath	podiatrist

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Doctors of podiatric medicine are primary care practitioners who diagnose diseases, deformities and injuries of the human foot and communicate diagnoses to patients. They treat patients using braces, casts, shields, orthotic devices, physical therapy, or prescribed medications. Doctors of podiatric medicine may also perform surgery on the bones of the forefoot and the subcutaneous soft tissues of the foot.
- Chiropodists and diploma or first-degree trained podiatrists diagnose diseases, deformities and injuries of the human foot and treat patients using braces, casts, shields, orthotic devices, physical therapy and subcutaneous soft-tissue foot surgery.
- Naturopaths diagnose patients' diseases and disorders and employ natural methods of healing such as acupuncture and acupressure, spinal manipulation, reflexology, hydrotherapy, herbal medicines, biochemical therapy, clinical nutrition, homeopathy and counselling in their treatment.
- Orthoptists assist ophthalmologists in the diagnosis and treatment of eye disorders by performing specialized eye tests to measure and assess defective binocular vision or abnormal eye movement in patients and prescribing treatment such as eye exercises or patching regimens.
- Osteopaths or osteopathic physicians diagnose disorders and injuries of the musculo-skeletal, circulatory and nervous systems and treat patients with manipulative therapy, medications or surgery.

Employment requirements

Doctors of podiatric medicine (D.P.M.)

- A four-year doctoral degree program in podiatric medicine available in the United States, normally following completion of a bachelor's degree program, is required.
- A one-year medical residency is required in British Columbia.
- A doctor of podiatric medicine (D.P.M.) degree is required to practise podiatry in Quebec, Alberta and British Columbia.

Chiropodists and podiatrists

- A three-year diploma program in chiropody (D.Ch.) obtained in Canada
or
A first-degree program in podiatric medicine (D.Pod.M.) obtained abroad (United Kingdom) is usually required.
- Provincial licensure is required in New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.

Naturopaths

- A university degree in pre-medical science is required.
- Completion of a university program in naturopathic medicine, obtained abroad
or
A four-year program in naturopathic medicine from a private institute is required.
- A licence is required in Ontario, Manitoba, Saskatchewan and British Columbia.

3123 Other Professional Occupations in Health Diagnosing and Treating

Orthoptists

- A minimum of two years of university education with a specialization in science
and
A two-year accredited hospital-based training program in orthoptics offered in Halifax, Toronto, Saskatoon and Vancouver and practical training under the supervision of an ophthalmologist are required.
- Certification with the Canadian Orthoptic Council is available but is only required in Quebec.
- Continuing education is required for recertification with the Canadian Orthoptic Council.

Osteopaths

- A bachelor's degree is required for admission to a doctor of osteopathy program.
- A four-year program in osteopathic medicine leading to a doctor of osteopathy degree
and
A one-year medical residency are required. These qualifications are usually obtained in the United States.
- A licence is required in New Brunswick, Quebec, Ontario, Saskatchewan, Alberta and British Columbia.

Additional information

- Chiropodist and podiatrist titles are used interchangeably in some provinces, although the title podiatrist is becoming more common. The use of the podiatrist job title does not necessarily refer to doctors of podiatric medicine (D.P.M.).
- Osteopaths may obtain a licence as general practitioners.
- Osteopaths have full scope of practice in New Brunswick, Quebec and Alberta, and limited scope of practice (to practise osteopathic manipulative medicine) in Ontario and Saskatchewan.
- There are two licences in British Columbia – one allows the doctor of osteopathy full scope of practice rights, while the other limits practice to osteopathic manipulative medicine.
- Orthoptists often work as part of a medical team which includes ophthalmologists, opticians and other ophthalmic medical personnel.
- Orthoptists may also be trained as ophthalmic technicians or technologists.

Classified elsewhere

- *Chiropractors* (3122)
- *General Practitioners and Family Physicians* (3112)
- *Midwives and Practitioners of Natural Healing* (3232)
- *Specialist Physicians* (3111)

3131 Pharmacists

Community pharmacists and hospital pharmacists compound and dispense prescribed pharmaceuticals and provide consultative services to both clients and health care providers. They are employed in community and hospital pharmacies, or they may be self-employed. Industrial pharmacists participate in the research, development, promotion and manufacture of pharmaceutical products. They are employed in pharmaceutical companies and government departments and agencies.

Example titles

clinical pharmacist
community pharmacist
druggist
hospital pharmacist

industrial pharmacist
pharmacist
retail pharmacist

Main duties

Community pharmacists and hospital pharmacists perform some or all of the following duties:

- Check prescriptions for proper dosage
- Compound prescribed pharmaceutical products by calculating, measuring and mixing the quantities of drugs and other ingredients required and filling appropriate containers with correct quantity
- Dispense prescribed pharmaceuticals to customers or to other health care professionals and advise them on indications, contraindications, adverse effects, drug interactions and dosage
- Maintain medication profiles of customers including registry of poisons and narcotic and controlled drugs
- Ensure proper preparation, packaging, distribution and storage of vaccines, serums, biologicals and other drugs and pharmaceuticals
- Order and maintain stock of pharmaceutical supplies
- Advise customers on selection and use of non-prescription medication
- May supervise and co-ordinate the activities of other pharmacists, pharmacy assistants, pharmacy technicians and other staff.

Industrial pharmacists perform some or all of the following duties:

- Participate in basic research for the development of new drugs
- Formulate new drug products developed by medical researchers
- Test new drug products for stability and to determine their absorption and elimination patterns
- Co-ordinate clinical investigations of new drugs

- Control the quality of drug products during production to ensure that they meet standards of potency, purity, uniformity, stability and safety
- Develop information materials concerning the uses, properties and risks of particular drugs
- Evaluate labelling, packaging and advertising of drug products
- Promote pharmaceutical products to health professionals.

Employment requirements

- A bachelor of science degree in pharmacy is required.
- Pharmacists also require practical training under the supervision of a pharmacist.
- Licensure is required in all provinces and territories for community and hospital pharmacists.

Classified elsewhere

- *Chemists* (2112)
- Chiefs of pharmacy (in 0311 *Managers in Health Care*)
- Pharmaceutical sales representatives (in 6221 *Technical Sales Specialists – Wholesale Trade*)
- Pharmacologists (in 2121 *Biologists and Related Scientists*)
- Pharmacy and drugstore managers (in 0621 *Retail Trade Managers*)
- Pharmacy assistants (in 3414 *Other Assisting Occupations in Support of Health Services*)
- Pharmacy director (in 0311 *Managers in Health Care*)

3132 Dietitians and Nutritionists

Dietitians and nutritionists plan, implement and oversee nutrition and food service programs. They are employed in a variety of settings including hospitals, extended care facilities, public health centres, the food and beverage industry, the pharmaceutical industry, educational institutions, sports organizations and government, or may work as private consultants.

Example titles

administrative dietitian
clinical dietitian
community nutritionist
consultant dietitian
dietitian

nutrition and dietetics researcher
nutritionist
public health dietitian
registered dietitian (RD)
registered nutritionist

Main duties

Dietitians and nutritionists perform some or all of the following duties:

- Develop, administer and supervise nutrition and food preparation and service programs in hospitals, nursing homes, schools, company cafeterias or similar settings
- Evaluate nutritional status of individuals and provide nutrition counselling and consulting to health professionals, dietetic interns, community groups, government, media and individuals
- Aid in the prevention and/or treatment of inadequate nutrition
- Plan, evaluate and conduct nutrition education programs and develop educational materials for various audiences
- Practice on an individual basis or as a member of an interdisciplinary team to determine nutritional needs of patients and to plan normal and therapeutic menus
- Study and analyze current scientific nutritional studies and conduct research to improve the nutritional value, taste, appearance and preparation of food.
- Work within industry in the development, testing and evaluation, and marketing of food and nutrition products or as a company representative supplying product related information to health professionals
- Confer with other health professionals, community groups, government and the media to provide consultation and advice in areas of nutrition interpretation, intervention and policy
- Supervise training of dietetic interns.

Dietitians and nutritionists may specialize in such areas as administrative dietetics, clinical dietetics, community dietetics, public health dietetics or research dietetics.

Employment requirements

- Dietitians require a master's or bachelor's degree in dietetics, nutrition or a related field such as food and nutritional science or biochemistry and
 - Approximately 40 weeks of supervised practicum training.
- Registration with a regulatory body is required in all provinces for dietitians.
- Membership in the national association, Dietitians of Canada, may be required for dietitians to practise.
- Nutritionists usually require the same education and training as dietitians.
- Registration with a regulatory body is required for nutritionists in British Columbia, Alberta, Quebec and (as a registered dietician-nutritionist) in New Brunswick.
- Membership with the national association, Dietitians of Canada, and/or a provincial regulatory body is available for nutritionists who have the same education and practicum training as dietitians.

Additional information

- Dietitians and nutritionists may progress to management positions through additional experience.

3132 Dietitians and Nutritionists

Classified elsewhere

- Dietary technicians (in 3219 *Other Medical Technologists and Technicians (Except Dental Health)*)
- Director of dietetics (in 0311 *Managers in Health Care*)
- *Food Service Supervisors* (6212)
- Home economists (in 4164 *Social Policy Researchers, Consultants and Program Officers*)

3141 Audiologists and Speech-Language Pathologists

Audiologists and speech-language pathologists diagnose, evaluate and treat human communication disorders including hearing, speech, language and voice disorders. Audiologists and speech-language pathologists are employed in hospitals, community and public health centres, extended care facilities, day clinics, rehabilitation centres and educational institutions, or may work in private practice.

Example titles

audiologist
certified audiologist
clinical audiologist
educational audiologist

research audiologist
speech-language clinician
speech-language pathologist
speech therapist

Main duties

Audiologists perform some or all of the following duties:

- Administer audiometric tests and examinations to diagnose and evaluate the degree and type of patients' hearing impairment
- Plan and implement habilitation/rehabilitation programs for patients, including selection, fitting and adjustment of hearing aid devices, teaching speech (lip) reading and providing counselling
- Establish personalized care plans working as a member of an interdisciplinary team
- Conduct research related to hearing
- May instruct students and other health care personnel.

Speech-language pathologists perform some or all of the following duties:

- Administer tests and examinations and observe patients to diagnose and evaluate speech, voice, resonance, language, cognitive-linguistic and swallowing disorders
- Plan and implement remedial programs to correct speech, language and voice disorders
- Establish group and personalized care plans working as a member of an interdisciplinary team
- Conduct research on speech and other communication disorders and on the development and design of diagnostic procedures and devices
- May instruct students and other health care personnel.

Employment requirements

- Audiologists require a master's degree in audiology.
- Speech-language pathologists require a master's degree in speech-language pathology.

- Registration with a regulatory body is required for audiologists and speech-language pathologists in New Brunswick, Quebec, Ontario, Manitoba and Saskatchewan.
- Membership in the national association, Canadian Association of Speech-Language Pathologists and Audiologists, may be required.
- In some jurisdictions, audiologists may be required to obtain a separate licence to dispense hearing aids.

Additional information

- Progression into management positions, such as chief audiologist or director of speech-language pathology, is possible with experience.

Classified elsewhere

- Audiology and speech-language technical and assisting occupations (in 3235 *Other Technical Occupations in Therapy and Assessment*)
- *Managers in Health Care* (0311)
- *Phoniatricians* (in 3111 *Specialist Physicians*)

3142 Physiotherapists

Physiotherapists assess patients and plan and carry out individually designed treatment programs to maintain, improve or restore physical functioning, alleviate pain and prevent physical dysfunction in patients. Physiotherapists are employed in hospitals, clinics, industry, sports organizations, rehabilitation centres and extended care facilities, or they may work in private practice.

Example titles

physical therapist
physiotherapist

registered physiotherapist
research physiotherapist

Main duties

Physiotherapists perform some or all of the following duties:

- Assess patients' physical abilities through evaluative procedures such as functional ability tests
- Establish treatment goals with patients based on physical diagnoses
- Plan and implement programs of physiotherapy including therapeutic exercise, manipulations, massage, education, the use of electro-therapeutic and other mechanical equipment and hydro-therapy
- Evaluate effectiveness of treatment plans and modify accordingly
- Communicate with referring physician and other healthcare professionals regarding patients' problems, needs and progress
- Maintain clinical and statistical records and confer with other health care professionals
- Develop and implement health promotion programs for patients, staff and the community
- May conduct research in physiotherapy
- May provide consulting or education services.

Physiotherapists may focus their practice in particular clinical areas such as neurology, oncology, rheumatology, orthopedics, obstetrics, pediatrics, geriatrics, in the treatment of patients with cardiovascular and cardiopulmonary disorders, burns or sports injuries or in the field of ergonomics.

Employment requirements

- A university degree in physiotherapy and a period of supervised practical training are required.
- A licence or registration with a regulatory body is required to practise physiotherapy in all provinces.

- Completion of the Physiotherapy National Exam, administered by the Alliance of Physiotherapy Regulatory Boards, may be required.

Additional information

- Progression to management positions, such as director of physiotherapy, is possible through experience and additional training.

Classified elsewhere

- Directors of physiotherapy (in 0311 *Managers in Health Care*)
- Physical rehabilitation technicians (in 3235 *Other Technical Occupations in Therapy and Assessment*)

3143 Occupational Therapists

Occupational therapists develop individual and group programs with people affected by illness, injury, developmental disorders, emotional or psychological problems and ageing to maintain, restore or increase their ability to care for themselves and to engage in work, school or leisure. They also develop and implement health promotion programs with individuals, community groups and employers. They are employed in health care facilities, in schools, and by private and social services agencies, or they may be self-employed.

Example titles

clinical occupational therapist
community occupational therapist
occupational therapist, case manager

occupational therapist (OT)
occupational therapist rehabilitation consultant
occupational therapist, research and development

Main duties

Occupational therapists perform some or all of the following duties:

- Analyse clients' capabilities and expectations related to life activities through observation, interviews and formal assessments
- Develop intervention programs to address clients' needs related to self-care, work and leisure activities
- Maintain clients' records
- Establish personalized care plans working as a member of an interdisciplinary team
- Consult and advise on health promotion programs to prevent disabilities and to maximize independent function in all activities of life
- May supervise support personnel and students and provide training.

Occupational therapists may specialize in working with specific populations such as children or adults, or persons with distinct problems such as dementia, traumatic brain injury and chronic pain, or provide special interventions such as return-to-work programs.

Employment requirements

- A university degree in occupational therapy including supervised fieldwork is required
or
Graduation from an occupational therapy program approved by the World Federation of Occupational Therapists (WFOT) is accepted in some provinces.
- Completion of the national certification examination may be required.
- Licensure with a regulatory body is required in all provinces.

- Membership in the national association, Canadian Association of Occupational Therapists, is required in some provinces.
- Occupational therapists may obtain expertise in a particular area through additional training or experience.

Additional information

- Occupational therapists may progress to management or administrative positions through further training and experience.

Classified elsewhere

- Directors of occupational therapy (in 0311 *Managers in Health Care*)

3144 Other Professional Occupations in Therapy and Assessment

This unit group includes specialized therapists not elsewhere classified who use techniques such as art, athletic, dance, music or recreational therapy or remedial gymnastics to aid in the treatment of mental and physical disabilities. They are employed by establishments such as hospitals, rehabilitation centres, clinics, recreational centres, nursing homes, educational institutions, prisons and day-care facilities or may work in private practice.

Example titles

art therapist
art therapy consultant
athletic therapist
dance-movement therapy researcher
drama therapist

movement therapist
music therapist
music therapy researcher
recreational therapist
remedial gymnast

Main duties

Therapists and other professionals in this unit group perform some or all of the following duties:

- Assess patients and review reports from physicians, psychiatrists, counsellors, teachers and others to determine patients' current and potential functioning level
- Prepare individualized and group treatment plans either independently or through an interdisciplinary team approach
- Implement treatment plan by carrying out specialized therapy sessions employing techniques such as art, athletic, dance, drama, music or recreational therapy or remedial gymnastics
- Observe and analyze patients during treatment sessions
- Record observations, write progress reports and consult with other health care professionals to evaluate treatment plan
- Initiate, design and implement specialized therapy programs for the general patient population or in the community
- May conduct research in respective field of specialization.

Employment requirements

- Athletic therapists usually require a bachelor's degree in sport studies or exercise science with a specialization in athletic therapy or a college program in sports injury management.
- Art therapists require a graduate degree in art therapy.

- Dance therapists require a bachelor's degree in psychology, dance, drama or movement therapy or An approved graduate program in dance, drama or movement therapy.
- Music therapists usually require a bachelor's degree in music therapy.
- Recreational therapists usually require a bachelor's degree or college program in recreation with a specialization in therapeutic recreation.
- Remedial gymnasts require completion of an approved college program in remedial gymnastics.
- Supervised practical training is usually required for occupations in this unit group.
- Creative or technical ability in the field of specialization is usually required.
- Certification or membership with the appropriate national professional association or provincial counterpart may be required.

Additional information

- There is no mobility between the different occupations in this unit group.

Classified elsewhere

- Exercise therapists (in 4167 *Recreation, Sports and Fitness Program Supervisors and Consultants*)
- *Occupational Therapists* (3143)
- *Physiotherapists* (3142)
- Technical assistants in therapy and assessment (in 3235 *Other Technical Occupations in Therapy and Assessment*)

3151 Head Nurses and Supervisors

Head nurses and supervisors supervise and co-ordinate the activities of registered nurses, licensed practical nurses and other nursing personnel in the provision of patient care. They are employed in health care institutions such as hospitals, clinics and nursing homes and in nursing agencies.

Example titles

head nurse
nursing care co-ordinator
nursing supervisor

patient care co-ordinator
psychiatric nursing supervisor
public health nursing supervisor

Main duties

Head nurses and supervisors perform some or all of the following duties:

- Supervise registered nurses, licensed practical nurses and other nursing personnel
- Evaluate patients' needs and ensure that required nursing care is delivered
- Set up and co-ordinate nursing services in conjunction with other health services
- Ensure quality nursing care is provided and appropriate administrative procedures are followed
- Assist in the establishment of unit policies and procedures
- Administer nursing unit budget and ensure that supplies and equipment are available
- Assist in the selection, evaluation and professional development of nursing personnel
- Collaborate on research projects related to nursing and medical care and multidisciplinary services
- May provide direct patient care.

Employment requirements

- Completion of a university, college or other approved registered nursing program is required.
- Courses in management studies such as the Nursing Unit Administration Course offered by the Canadian Hospital Association or other degree, diploma, certificate or studies in management or administration may be required.
- Registration as a registered nurse by a provincial or territorial regulatory body or, in Manitoba, Saskatchewan, Alberta and British Columbia, provincial registration as a registered psychiatric nurse is required.
- Clinical experience as a registered nurse is required.

Additional information

- Progression to management positions, such as director of nursing, is possible with experience.

Classified elsewhere

- Directors of nursing and nursing unit administrators (in 0311 *Managers in Health Care*)

3152 Registered Nurses

This unit group includes registered nurses, nurse practitioners, registered psychiatric nurses and graduates of a nursing program who are awaiting registration (graduate nurses). They provide direct nursing care to patients, deliver health education programs and provide consultative services regarding issues relevant to the practice of nursing. They are employed in a variety of settings including hospitals, nursing homes, extended care facilities, rehabilitation centres, doctors' offices, clinics, community agencies, companies and private homes, or they may be self-employed.

Example titles

clinical nurse	nursing consultant
community health nurse	nursing researcher
critical care nurse	occupational health nurse
graduate nurse	private duty nurse
intensive care nurse	registered nurse (R.N.)
nurse researcher	registered psychiatric nurse (R.P.N.)

Main duties

General duty registered nurses perform some or all of the following duties:

- Assess patients to identify appropriate nursing interventions
- Collaborate with members of an interdisciplinary health team to plan, implement, co-ordinate and evaluate patient care in consultation with patients and their families
- Administer medications and treatments as prescribed by a physician or according to establish policies and protocols
- Monitor, assess, address, document and report symptoms and changes in patients' conditions
- Operate or monitor medical apparatus or equipment
- Assist in surgery and other medical procedures
- May supervise licensed practical nurses and other nursing staff
- May develop and implement discharge planning process on admission of patients
- May teach and counsel patients and their families on health-related issues in collaboration with other health care providers.

Registered nurses may specialize in areas such as surgery, obstetrics care, psychiatric care, critical care, pediatrics, geriatrics, community health, occupational health, emergency care, rehabilitation or oncology.

Nurse practitioners are independent care providers with a broader scope of practice relative to registered nurses.

- Occupational health nurses develop and implement employee health education programs and provide registered nursing care in private businesses and industry.
- Community health nurses provide health education and registered nursing care in public health units and through home visits, manage complex home care cases, participate in community needs assessment and program development, conduct disease screening and deliver immunization programs.
- Psychiatric nurses provide nursing care, supportive counselling and life skills programming to patients in psychiatric hospitals, mental health clinics, long-term care facilities and community-based settings.
- Nursing consultants provide consultative services to institutes, associations and health care organizations regarding issues and concerns relevant to the nursing profession and nursing practice.
- Nursing researchers engaged in research activities related to nursing are self-employed or are employed by hospitals, public and private organizations and governments.
- Clinical nurses provide leadership, advice and counsel on the provision of research-based care for specific patient groups within the care of particular health care organizations.

Employment requirements

Registered nurses

- Completion of a university, college or other approved registered nursing program is required.

3152 Registered Nurses

- Additional academic training or experience is required to specialize in a specific area of nursing.
- A master's or doctoral degree in nursing is usually required for clinical nurse specialists, clinical nurses, nursing consultants and nursing researchers.
- Registration with a regulatory body is required in all provinces and territories.

Nurse practitioners

- A master's degree in nursing, or a nursing program or other advanced nurse practitioner diploma program is required.
- Registration with a regulatory body is required in all provinces and territories
- In Ontario, successful completion of the Extended Class Registration Examination (ECRE) is required for registration as Registered Nurse in the Extended Class RN(EC).

Registered psychiatric nurses

- Completion of a university or college registered psychiatric nursing program is required.
- Registration with a regulatory body is required in Manitoba, Saskatchewan, Alberta and British Columbia.

Additional information

- Nurses trained exclusively as registered psychiatric nurses (RPN) are regulated in Manitoba, Saskatchewan, Alberta and British Columbia. In all other provinces and territories, registered nurses (RN) may work as psychiatric nurses without separate registration.
- Registered nurses may progress to supervisory and managerial positions with experience.

Classified elsewhere

- *Head Nurses and Supervisors* (3151)
- *Licensed Practical Nurses* (3233)
- *Nursing service managers* (in 0311 *Managers in Health Care*)
- *Registered practical nurses* (in 3233 *Licensed Practical Nurses*)

3211 Medical Laboratory Technologists and Pathologists' Assistants

Medical laboratory technologists conduct medical laboratory tests, experiments and analyses to assist in the diagnosis, treatment and prevention of disease. They are employed in medical laboratories in hospitals, private clinics, research institutions and universities. Pathologists' assistants assist at autopsies and examinations of surgical specimens or perform autopsies under a pathologist's supervision. They are usually employed in hospitals. Medical laboratory technologists who are also supervisors are included in this unit group.

Example titles

clinical immunology technologist
cytogenetics technologist – medical laboratory
histology technologist
immunohematology technologist

medical laboratory supervisor
medical laboratory technologist
medical technologist – medical laboratory
pathology assistant

Main duties

Medical laboratory technologists perform some or all of the following duties:

- Conduct chemical analyses of blood, urine, and cerebro-spinal and other body fluids
- Study blood cells and other tissues to determine their relation to various physiological and pathological conditions
- Prepare tissue sections for microscopic examinations using techniques to demonstrate special cellular tissue elements or other characteristics
- Establish procedures for the analysis of specimens and for medical laboratory experiments
- Perform blood group, type and compatibility tests for transfusion purposes
- May supervise and train other medical laboratory technical staff, students and helpers
- May perform the duties of a pathologist's assistant in some hospitals.

Medical laboratory technologists may specialize in areas such as clinical chemistry, clinical microbiology, hematology, histotechnology, immunohematology and cytotechnology.

Pathologists' assistants perform some or all of the following duties:

- Prepare for autopsies by obtaining patients' medical records and arranging for radiographic examinations
- Assist with or perform autopsies and surgical specimen examinations under pathologists' supervision
- Dissect, examine, weigh and photograph organs and specimens, collect tissue specimens for chemical analysis and record findings

- May prepare bodies for release to funeral homes following completion of autopsies
- May train junior resident pathologists and train and supervise morgue attendants
- May perform the duties of a medical laboratory technologist in some hospitals.

Employment requirements

- Medical laboratory technologists require a bachelor of science or medical laboratory science degree
 - or
 - A two- or three-year college program in medical laboratory technology
 - and
 - A period of supervised practical training.
- Registration with a regulatory body is required in New Brunswick, Quebec, Ontario, Saskatchewan and Alberta.
- Certification by the Canadian Society for Medical Laboratory Science is available for medical laboratory technologists and is usually required by employers.
- Pathologists' assistants require a bachelor of science degree
 - or
 - Training and experience as a registered nurse, licensed practical nurse or medical laboratory technologist
 - and
 - Specialized on-the-job training.
- Certification by the Canadian Society for Medical Laboratory Science may be required for pathologists' assistants.

3211 Medical Laboratory Technologists and Pathologists' Assistants

Classified elsewhere

- *Medical Laboratory Technicians* (3212) and *Technical Occupations in Life Sciences* (222)
- Physical and life science technologists in non-medical laboratories (in 221 *Technical Occupations in Physical Sciences*)

3212 Medical Laboratory Technicians

Medical laboratory technicians conduct routine medical laboratory tests and set up, clean and maintain medical laboratory equipment. They are employed in medical laboratories in hospitals, clinics, research institutes and universities and in government research laboratories.

Example titles

medical laboratory aide
medical laboratory assistant
medical laboratory technician

phlebotomist
phlebotomy aide

Main duties

Medical laboratory technicians perform some or all of the following duties:

- Collect blood or other samples from patients
- Receive tissue samples from patients
- Log patient samples and prepare them for testing
- Set up medical laboratory equipment
- Conduct routine laboratory tests and sample analyses
- Clean and maintain medical laboratory and medical laboratory equipment.

Employment requirements

- Completion of secondary school and on-the-job training
or
Completion of a 6- to 14-month program for medical laboratory techniciansassistants is required.
- Combined laboratory and X-ray technicians require completion of a combined laboratory X-ray technology program.

Additional information

- Training as a licensed practical nurse, medical technician or in a related occupation is usually required for phlebotomists or phlebotomy aides.

Classified elsewhere

- *Medical Laboratory Technologists and Pathologists' Assistants (3211)*

3213 Veterinary and Animal Health Technologists and Technicians

Veterinary and animal health technologists and technicians provide technical support to veterinarians by caring for animals and assisting in the diagnosis and treatment of animal health disorders. They are employed in veterinary clinics, animal hospitals, animal shelters, humane societies, zoos, animal research laboratories, pharmaceutical companies and government.

Example titles

animal health technologist
laboratory animal technician
veterinarian assistant

veterinary technician
veterinary technologist

Main duties

Veterinary and animal health technologists and technicians perform some or all of the following duties:

- Provide nursing care and rehabilitation therapy for animals
- Handle, restrain and care for animals undergoing treatment and surgery
- Produce radiographs, collect samples and perform other laboratory tests to assist in diagnosis of animal health problems
- Assist veterinarian with animals before, during and following surgery, and by preparing surgical equipment, administering and monitoring anaesthetics and cleaning up after surgery
- Prepare and administer medications and vaccines under direction of veterinarian
- Administer treatments as prescribed by a veterinarian
- Provide wound and bandage care
- Conduct specialized procedures such as animal identification and hoof trimming
- Counsel clients on animal health care including nutrition and home care
- Conduct and assist in laboratory research
- Perform routine animal dental procedures, and assist veterinarians with animal dentistry
- May perform a variety of office management and clerical duties.

Employment requirements

- Completion of a two- or three-year animal health/veterinary technology college program is required.
- Successful completion of a national registration examination may be required in some employment settings.

- Registration with provincial animal health technologists' or veterinary technicians'/technologists' associations is available and is mandatory in some provinces.

Additional information

- With experience, veterinary and animal health technologists and technicians may progress to supervisory positions.

Classified elsewhere

- *Pet Groomers and Animal Care Workers* (6483)

3214 Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists

Respiratory therapists assist physicians in the diagnosis, treatment and care of patients with respiratory and cardiopulmonary disorders. They are employed in hospitals, medical clinics, health units, extended care facilities, public health centres and respiratory home care companies. Clinical perfusionists provide technical support to patients undergoing cardiac surgery and patients requiring cardio-respiratory support.

Cardiopulmonary technologists assist physicians in the technical aspects of diagnosis and treatment of cardiovascular and pulmonary disease. Clinical perfusionists and cardiopulmonary technologists are primarily employed in hospitals. Supervisors and instructors of respiratory therapists, clinical perfusionists and cardiopulmonary technologists are included in this unit group.

Example titles

cardiopulmonary technologist

cardiovascular perfusionist

cardiovascular perfusion supervisor

certified clinical perfusionist (CCP)

chief respiratory technologist

clinical perfusionist

perfusionist

registered respiratory therapist (RRT)

respiratory therapist

respiratory therapy clinical instructor

Main duties

Respiratory therapists perform some or all of the following duties:

- Perform diagnostic tests, such as arterial blood gas analysis and cardiopulmonary functions tests
- Operate and monitor respiratory equipment to administer treatments such as oxygen, oxygen-air mixtures, humidified air or medications
- Operate, monitor, maintain and test a variety of diagnostic and therapeutic equipment
- Assess patients and perform or assist with interventions such as airway maintenance, line insertions, inductions and intubations
- Perform artificial respiration and external cardiac massage
- Assist with transport of high-risk patients
- Supervise and train students and other respiratory therapists
- Participate in home care programs for chronic respiratory patients and provide patient and family education
- Participate in research related to cardiac and pulmonary disorders.

Respiratory therapists may specialize in areas such as anaesthesia, critical care, pediatrics, cardiopulmonary diagnostics and respiratory home care.

Clinical perfusionists perform some or all of the following duties:

- Assemble, maintain and operate extracorporeal circulation equipment, intra-aortic balloon pumps and other heart assist devices to support or temporarily replace patients' cardiopulmonary functions during open-heart surgery
- Administer blood products, drugs and other substances through heart-lung machines and other devices as directed by cardiac surgeons and anaesthetists
- Monitor vital signs to maintain patients' physiological functions during cardiopulmonary surgery
- Supervise and train student clinical perfusionists and other clinical perfusionists.

Cardiopulmonary technologists perform some or all of the following duties:

- Perform diagnostic tests, such as pulmonary function and asthma stress, or assist physicians with cardiac and cardiopulmonary stress tests and bronchoscopies
- Determine patients' blood characteristics such as activated clotting time and oxygen saturation
- Operate, monitor, maintain, calibrate and test diagnostic and therapeutic equipment
- Monitor patients and advise physician of any changes in patients' condition
- Prepare medications and administer inhaler and other treatments under supervision of cardiologist
- Provide information and care for patients during tests

3214 Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists

- Assist with the preparation of cardiac catheterization room, prepare specialized catheters and assist cardiologists during catheterization
- Perform analysis, programming and monitoring of implanted devices such as pacemakers and defibrillators during surgery
- Supervise and train students and other cardiopulmonary technologists
- Provide technical support for research.

Employment requirements

- Respiratory therapists require the completion of a two- to three-year college, hospital or university degree program in respiratory therapy, including clinical training.
- Clinical perfusionists require the completion of a respiratory therapy or registered nursing program with a minimum of one year of work experience as a respiratory therapist or registered nurse
and
Completion of a college or university program in clinical perfusion, including clinical training.
- Cardiopulmonary technologists require a minimum of a diploma in an allied health discipline such as respiratory therapy, nursing diploma or degree, or a degree in a related science and training through a post-diploma program or supervised on-the-job clinical training.
- Licensing is required for respiratory therapists in Quebec, Ontario, Manitoba and Alberta.
- Registration with the Canadian Association of Cardiopulmonary Technologists (CACPT) may be required.

Additional information

- Supervisory and instructor positions in this unit group require experience in their respective fields as a respiratory therapist, clinical perfusionist or cardiopulmonary technologist.

Classified elsewhere

- *Other Medical Technologists and Technicians (Except Dental Health)* (3219)
- *Other Technical Occupations in Therapy and Assessment* (3235)

3215 Medical Radiation Technologists

This unit group includes technologists who operate radiographic and radiation therapy equipment to administer radiation treatment and produce images of body structures for the diagnosis and treatment of injury and disease. They are employed in hospitals, cancer treatment centres, clinics and radiological laboratories. Medical radiation technologists who are supervisors or instructors are included in this unit group.

Example titles

clinical instructor, radiation therapy
mammography technician
nuclear medicine clinical instructor
nuclear medicine technologist
radiation oncology technologist
radiation therapist

radiation therapy technologist (RTT)
radiography technologist
radiological technologist
radiotherapy technician
supervisor, nuclear medicine technologists
X-ray (radiology) technician

Main duties

Radiological technologists perform some or all of the following duties:

- Operate X-ray, radiographic and fluoroscopic equipment, computerized tomography (CT) scanners, mammography units and magnetic resonance imaging (MRI) scanners to produce radiographs or anatomic images of the human body for the diagnosis by radiologists of disease or injury
- Record and process patient data
- Perform basic verification and quality control checks on radiographic and film processing equipment
- Provide appropriate care for the patient during the radiographic examination
- Apply radiation protection measures
- May train and supervise student radiographers or supervise other radiological technologists.

Radiological technologists may specialize in areas such as computerized tomography, angiography, mammography, magnetic resonance imaging, interventional radiology, dosimetry, stereotaxy or brachytherapy.

Nuclear medicine technologists perform some or all of the following duties:

- Prepare radiopharmaceuticals, such as radionuclides and other materials and administer them to patients or to biological samples
- Operate radiation detection equipment, such as gamma cameras, scanners, scintillation counters, tomodensitometers and ionization chambers, to acquire data for use by nuclear medicine physicians in the diagnosis of disease

- Perform diagnostic procedures using radioactive materials on biological specimens, such as blood, urine and faeces
- Record and process results of procedures
- Check equipment to ensure proper operation
- Provide appropriate care for the patient during the examination
- Apply radiation protection measures
- May train and supervise student nuclear medicine technologists or supervise other nuclear medicine technologists.

Radiation therapists perform some or all of the following duties:

- Operate linear accelerators, cobalt 60, X-ray and other radiation therapy equipment to administer radiation treatment prescribed by radiation oncologists
- Check radiation therapy equipment to ensure proper operation
- Assist radiation oncologists and clinical physicists with preparation of radiation treatment plan
- Assist in the preparation of sealed radioactive materials such as cobalt, radium, cesium and isotopes and the construction of devices such as plaster casts and acrylic moulds to assist with administration of radiation treatment
- Monitor the patient's physical and psychological well-being during the entire course of treatment
- Advise the patient regarding side effects of radiation
- May train and supervise student radiotherapy technologists or supervise other radiotherapy technologists.

3215 Medical Radiation Technologists

Employment requirements

- Completion of a two- to three-year college, hospital or other approved program in diagnostic radiography (for radiological technologists), nuclear medicine technology (for nuclear medicine technologists) or radiation therapy (for radiation therapists)
or
A bachelor of health sciences in radiography, nuclear medicine or radiation therapy
and
A period of supervised practical training are required.
- Licensure with a regulatory body is required in all provinces.
- Certification by the Canadian Association of Medical Radiation Technologists is required in all provinces except Quebec.
- Experience as a medical radiation technologist is required for supervisors and instructors.

Additional information

- There is no mobility between the three types of medical radiation technologists without further training.

Classified elsewhere

- Other medical technologists and technicians (in 321 *Medical Technologists and Technicians (Except Dental Health)*)

3216 Medical Sonographers

Medical sonographers operate ultrasound equipment to produce and record images of various parts of the body to aid physicians in monitoring pregnancies and in diagnosing cardiac, ophthalmic, vascular and other medical disorders. They are employed in clinics and hospitals. Medical sonographers who are supervisors or instructors are included in this unit group.

Example titles

diagnostic medical sonography instructor
medical sonographer
medical sonographers supervisor

registered diagnostic medical sonographer
(RDMS)
ultrasound technologist

Main duties

Medical sonographers perform some or all of the following duties:

- Operate ultrasound imaging equipment that transmits high frequency sound pulses through the body to produce images of those parts of the body requiring examination
- Monitor examination by viewing images on video screen, to evaluate quality and consistency of diagnostic images, and make adjustments to equipment, as required
- Record, store and process scanned images by using camera unit connected to ultrasound equipment
- Observe and care for patients throughout examinations to ensure patient safety and comfort
- Prepare examination reports for physicians to aid in the monitoring of pregnancies and the diagnosis of cardiac, abdominal, ophthalmic, vascular and other disorders
- Perform quality control checks on ultrasound equipment to ensure proper operation and perform minor repairs and adjustments as required
- May supervise and train student and other medical sonographers.

Medical sonographers may specialize in abdominal, cardiac, cerebral, obstetrical and gynaecological, ophthalmic, intraluminal or peripheral vascular sonography. They may also specialize in adult or pediatric echocardiography or neurosonology.

Employment requirements

- Completion of a training program in a related field such as diagnostic radiography, nuclear medicine or nursing
and
Completion of a one-year college or hospital-based program in diagnostic medical sonography and supervised practical training are required.
- Certification examinations by the American Registry of Diagnostic Medical Sonographers are usually required by employers.
- Registration with the Canadian Society of Diagnostic Medical Sonographers or a provincial counterpart is available and may be required by employers.

Additional information

- The Canadian Society of Diagnostic Medical Sonographers recognizes the certifying examinations of the American Registry of Diagnostic Medical Sonographers.

Classified elsewhere

- Other technologists and technicians who operate diagnostic medical equipment (in 3218 *Electroencephalographic and Other Diagnostic Technologists, n.e.c.*)

3217 Cardiology Technologists

Cardiology technologists operate electrocardiogram and other electronic equipment to record cardiac activity of patients to aid in the diagnosis and treatment of heart disease. They are employed in hospitals and clinics. Cardiology technologists who are supervisors or instructors are included in this unit group.

Example titles

cardiac stress technologist
cardiology supervisor
cardiology technologist

electrocardiographic (ECG) technologist
electrocardiography technologist

Main duties

Cardiology technologists perform some or all of the following duties:

- Operate electrocardiogram and other electronic equipment to record cardiac activity of patients
- Perform cardiovascular procedures and tests, such as electrocardiograms, exercise tolerance tests, ambulatory monitoring and scanning of tapes, pacemaker analysis and follow-up, and echocardiogram
- Record and assess cardiac activity and provide preliminary reports of tests
- Provide patients with care during procedures and tests
- Prepare reports for interpretation by cardiologists
- Reprogram pacemakers according to required standards
- Check cardiology equipment to ensure proper operation
- May analyze test and notify physician or other health care professionals
- May administer certain drugs under direct supervision of physician
- May document and record pacemaker implant threshold measurements under direct supervision of cardiac surgeon
- May supervise and train students, other cardiology technologists and nurses.

Classified elsewhere

- Cardiovascular perfusionists (in 3214 *Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists*)
- Other technologists and technicians who operate diagnostic medical equipment (in 3218 *Electroencephalographic and Other Diagnostic Technologists, n.e.c.*)

Employment requirements

- Completion of a two-year college diploma program in cardiology technology
and
Supervised practical training are required.
- Registration with the Canadian Society of Cardiology Technologists is required in all provinces except in Quebec.

3218 Electroencephalographic and Other Diagnostic Technologists, n.e.c.

This unit group includes other diagnostic technologists not elsewhere classified who operate electroencephalographic and other diagnostic equipment to assist physicians in diagnosing diseases, injuries and abnormalities. Electroencephalographic and other diagnostic technologists who are supervisors or instructors are included in this unit group. They are employed in clinics, hospitals and medical laboratories.

Example titles

electroencephalograph (EEG) technologist
electromyography (EMG) technologist
electroneurodiagnostic (END) technologist

electroneurophysiology (ENP) technologist
evoked potential (EP) technologist
neuroelectrophysiology technologist

Main duties

Electroencephalographic (EEG) technologists perform some or all of the following duties:

- Review patient's case history and assess nature of problem to determine processes and tests required
- Attach diagnostic equipment to patients and ensure patients' comfort and safety
- Operate diagnostic equipment such as electroencephalographs and evoked potential equipment to record the electrical activity of the brain, cranial and central nervous system
- Take notes on the recorded graph to identify interference such as poor electrode contact or patient movement
- Prepare recordings and reports for interpretation by neurologists
- Check, calibrate and perform routine maintenance to diagnostic equipment
- Train and supervise students, technicians or other electroencephalographic technologists.

Electromyography (EMG) technologists perform some or all of the following duties:

- Review patient's case history and assess nature of problem to determine processes and tests required
- Attach electromyographic equipment to patients and ensure patient's comfort and safety
- Operate electromyographic equipment to conduct electrophysiological nerve conduction velocity tests and to assist physicians in conducting electrophysiological tests such as muscle strength and repetitive stimulation
- Prepare recordings and reports of findings for physicians to aid in the diagnosis of neuromuscular disorders
- Check, calibrate and perform routine maintenance of equipment

- Train and supervise students, technicians or other electromyography technologists.

Employment requirements

- Completion of secondary school and additional specialized training is required for electroencephalographic and other diagnostic technologists in this unit group.
- Electroencephalographic technologists require completion of a two-year college or hospital-based program in electrophysiology technology and Supervised practical training.
- Registration with the Canadian Board of Electroencephalograph Technologists is available for electroencephalographic technologists and is usually required by employers.
- Electromyography technologists require two years of supervised practical training.
- Registration with the Canadian Society of Clinical Neurophysiologists/EMG Section is available for electromyography technologists and is usually required by employers.
- Electroencephalographic technologists who operate evoked potential equipment may require registration with the American Board of Registration of Electroencephalographic and Evoked Potential Technologists.

Classified elsewhere

- *Cardiology Technologists (3217)*
- *Medical Radiation Technologists (3215)*
- *Medical Sonographers (3216)*
- *Other medical technologists (in 3219 Other Medical Technologists and Technicians (Except Dental Health))*

3219 Other Medical Technologists and Technicians (Except Dental Health)

This unit group includes medical technologists and technicians not elsewhere classified, such as dietary technicians, ocularists, prosthetists, orthotists, prosthetic technicians and orthotic technicians. Dietary technicians are employed in health care and commercial food service establishments such as hospitals, extended care facilities, nursing homes, schools, cafeterias and fast food outlets. Ocularists are employed in custom ocular prosthetic laboratories, or they may be self-employed. Prosthetists, orthotists and prosthetic and orthotic technicians are employed in hospitals, clinics, prosthetics and orthotics laboratories, and prosthetic device manufacturing companies. Prosthetists and orthotists may also be self-employed.

Example titles

dietary technician
food and nutrition technician – dietetics
ocularist
ocularist technician

orthotic technician
orthotist
prosthetic technician
prosthetist

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Dietary technicians assist dietitians or nutritionists to plan and supervise food service operations; plan menus and diet for individuals or groups under the direction of a dietitian or nutritionist; assist in the supervision of personnel who prepare and serve food; help patients select menu items; and assist dietitians with research in food, nutrition and food service systems.
- Ocularists design, fabricate and fit ocular prostheses and conformers, and may design and fabricate implants; paint the iris and pupil of artificial eyes; clean and restore ocular prostheses; advise patients concerning the loss of depth perception and the care and use of ocular prostheses; repair and maintain fabrication and laboratory equipment; and consult with ophthalmologists concerning insertion of ocular prostheses.
- Prosthetists and orthotists design, fabricate and fit prosthetic and orthotic appliances such as artificial limbs, braces or supports; interpret physicians' specifications and examine and measure patients to develop working sketches of appliances; make and modify plaster casts of areas to receive prostheses or orthoses; fit, adjust and repair appliances; advise patients in the use and care of prostheses and orthoses; and supervise and direct the activities of prosthetic and orthotic technicians.

- Prosthetic and orthotic technicians assemble or build prosthetic and orthotic appliances according to drawings, measurements and plaster casts using a variety of materials such as metals, plastics and leathers; repair, rebuild and modify prosthetic and orthotic appliances or orthopaedic footwear; and may take the body or limb measurements of patients.

Employment requirements

- Dietary technicians require completion of a two- to three-year college program in dietary technology and supervised practical training.
- Ocularists require completion of the ocularist training program of the American Society of Ocularists and supervised practical training
 - or
 - A five-year supervised practical training program under a certified ocularist.
- Certification by the National Examining Board of Ocularists is usually required.
- Prosthetists and orthotists require a two-year college program in prosthetics and orthotics technology and three years of supervised practical training.
- Certification by the Canadian Board of Certification of Prosthetists and Orthotists (CBCPO) may be required.
- Prosthetic and orthotic technicians usually require a two- to three- year college program in prosthetics and orthotics and one to two years of supervised practical training
 - or
 - Completion of secondary school and up to four years of supervised practical training under a certified prosthetist or orthotist.

3219 Other Medical Technologists and Technicians (Except Dental Health)

- Registration with the Canadian Association of Prosthetists and Orthotists (CAPO) may be required.

Additional information

- Prosthetic and orthotic technicians may become certified prosthetists or orthotists with an additional two years of experience as a registered prosthetic or orthotic technician and completion of certification examinations by the Canadian Board of Certification of Prosthetists and Orthotists.

Classified elsewhere

- Other health care technologists and technicians (in 321 *Medical Technologists and Technicians (Except Dental Health)*)
- Technologists or technicians in therapy and assessment (in 3235 *Other Technical Occupations in Therapy and Assessment*)

3221 Denturists

Denturists examine patients and design, construct and repair removable dentures. Most denturists work in private practice.

Example titles

dental mechanic
denturist

denturologist

Main duties

Denturists perform some or all of the following duties:

- Measure patients' jaws to determine size and shape of dentures required
- Make impressions of patients' teeth, gums and jaws
- Construct dentures or direct other workers to construct dentures
- Fit and modify new dentures
- Repair dentures
- Reline and rebase dentures
- Fabricate mouth protectors, anti-snoring prostheses and removable prostheses on implants
- May prepare partial dentures.

Employment requirements

- Completion of a two- or three-year college program in denturism/denturology is required.
- An internship in a registered denture clinic may be required.
- Licensing by a provincial or territorial regulatory body is required except in Prince Edward Island.

Classified elsewhere

- *Dental Assistants* (3411)
- *Dental Hygienists and Dental Therapists* (3222)
- *Dental Technologists, Technicians and Laboratory Bench Workers* (3223)
- *Dentists* (3113)

3222 Dental Hygienists and Dental Therapists

Dental hygienists provide dental hygiene treatment and information related to the prevention of diseases and disorders of the teeth and mouth. They are employed in dentists' offices, hospitals, clinics, educational institutions, government agencies and private industry. Dental therapists carry out limited dental services related to the prevention and treatment of diseases and disorders of the teeth and mouth. They are employed by the federal government and the provincial governments to provide services in rural and remote communities.

Example titles

dental hygienist
dental nurse

dental therapist

Main duties

Dental hygienists perform some or all of the following duties:

- Conduct an initial dental assessment and consult with dentists on patient care
- Take dental impressions
- Instruct patients regarding oral hygiene procedures
- Clean and stimulate the gums to prevent gum disease
- Remove stains and deposits from teeth to prevent tooth and root decay
- Apply fluoride treatment
- Take and develop X-rays
- May perform restorative and orthodontic procedures under the direction of a dentist
- May supervise dental assistants in their health care functions.

Dental therapists perform some or all of the following duties:

- Conduct dental assessments and consult with dentist on patient care
- Take dental impressions
- Take and develop X-rays
- Remove stains and deposits from teeth to prevent tooth and root decay
- Apply fluoride treatment
- Instruct patients regarding oral hygiene procedures
- Supervise dental assistants in their health care functions
- May drill and fill cavities, extract teeth and replace portions of tooth crown.

Employment requirements

- Dental hygienists are required to complete a college program ranging from one to three years, or other approved program in dental hygiene recognized by the governing board within the province or territory of residence.
- Dental therapists are required to complete the two-year dental therapy diploma program at the National School of Dental Therapy in Prince Albert, Saskatchewan, offered by Health Canada.
- Licensing by the appropriate provincial or territorial regulatory body is required for dental hygienists.
- Licensure is required for dental therapists in Newfoundland and Labrador, Saskatchewan, Nunavut, the Northwest Territories and the Yukon.

Classified elsewhere

- *Dental Assistants (3411)*
- *Dental Technologists, Technicians and Laboratory Bench Workers (3223)*
- *Dentists (3113)*
- *Denturists (3221)*

3223 Dental Technologists, Technicians and Laboratory Bench Workers

Dental technologists and technicians design, prepare and fabricate dentures and dental devices as prescribed by dentists and other specialists. Dental laboratory bench workers assist dental technologists and technicians in preparing and fabricating dentures and other dental devices. They are employed in dental laboratories. Supervisors of dental technologists and technicians are also included in this unit group.

Example titles

ceramic denture moulder
dental laboratory bench worker
dental technician
dental technician supervisor
dental technologist

denture finisher
denture wax pattern former
orthodontic band maker
registered dental technician
registered dental technologist

Main duties

Dental technologists and technicians perform some or all of the following duties:

- Design, fabricate or repair dental devices including full or partial dentures, crowns, bridges, inlays, onlays, clasps and bands, and implants
- May consult with dentists or other specialists on problematic dental cases
- May train and supervise other dental technicians or dental laboratory bench workers in fabricating dentures and other dental devices
- May perform supervisory and administrative functions for the dental laboratory.

Dental laboratory bench workers perform some or all of the following duties:

- Prepare plaster models and moulds from dental impressions
- Prepare wax bite-blocks and impression trays
- Cast gold or metal alloys for bridges and denture bases
- Pack plastic material in moulds to form full or partial dentures
- Mould wax over denture set-up to form full contours of artificial gums
- Make orthodontic bands from gold, silver, stainless steel or other metals
- Finish metal framework of dentures and polish and buff dentures to obtain natural finish.

Employment requirements

- Dental technologists and technicians are required to complete a college program in dental technology
 - or
 - Four or more years of on-the-job training under the supervision of a registered dental technologist or technician.
- Registration with a regulatory body is required for dental technologists and technicians in all provinces except in Manitoba.
- Dental laboratory bench workers usually require secondary school and up to two years of on-the-job training.

Additional information

- Dental laboratory bench workers may progress to dental technologists and technicians positions with training, experience and registration.

Classified elsewhere

- *Dental Assistants* (3411)
- *Dental Hygienists and Dental Therapists* (3222)
- *Denturists* (3221)

3231 Opticians

Opticians fit clients with prescription eyeglasses or contact lenses, assist clients in the selection of eyeglass frames, arrange for the production of eyeglasses or contact lenses and mount lenses in eyeglass frames. They are employed in optical retail outlets or other establishments with optical dispensing departments, or they may be self-employed. Student opticians and opticians who are managers of optical retail outlets are included in this group.

Example titles

contact lens fitter
contact lens technician
dispensing optician

ophthalmic dispenser
optician

Main duties

Opticians perform some or all of the following duties:

- Obtain specifications for eyeglasses or contact lenses from a prescription prepared by an ophthalmologist or optometrist or by analyzing the client's eyeglasses or contact lenses and by measuring client's eye curvature, pupillary distance and bridge width, using optical measuring devices
- Assist clients in selecting eyeglasses by advising on lens materials, frames, tints and anti-reflection coating
- Advise on use and care of contact lenses
- Arrange for grinding and polishing of lenses or grind and polish lenses
- Cut and edge lenses and fit lenses into frames
- Adjust finished eyeglasses to fit client
- May supervise or manage the activities of other opticians or student opticians.

Employment requirements

- Completion of a two- or three-year college program in ophthalmic dispensing, which includes an apprenticeship
or
Completion of an Optician's Guild two-year ophthalmic dispensing correspondence course including practical experience is required.
- Completion of an Optician's Guild two-year contact lens technician correspondence course may also be required for contact lens technicians.
- Licensing by a regulatory body is required in all provinces.

Classified elsewhere

- Managers of optical retail outlets or of optical dispensing departments who are not opticians (in 0621 *Retail Trade Managers*)
- Ophthalmologists (in 3111 *Specialist Physicians*)
- Optical lab technicians (in 3414 *Other Assisting Occupations in Support of Health Services*)
- *Optometrists* (3121)

3232 Midwives and Practitioners of Natural Healing

Midwives are primary care providers who provide full-course care to women and their babies during pregnancy, labour, birth and the post-natal period. They are employed in hospitals, birthing centres and private practice. Practitioners of natural healing provide alternative forms of health care to patients. They are employed by clinics, health clubs, spas or health food stores, or they may work in private practice.

Example titles

acupuncturist
Chinese medical practitioner
herbalist
herborist
homeopath

homeopathist
midwife
reflexologist
rolfer

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Midwives provide full-course care to women and their babies during pregnancy, labour, birth and the post-natal period including monitoring the health of mother and baby; managing labour and spontaneous normal deliveries; caring for, assessing and monitoring the healthy newborns; and providing advice and information regarding care for newborns and young infants;
- Acupuncturists diagnose the diseases, physiological disorders and injuries of patients and treat them by the insertion of acupuncture needles or through the use of heat, pressure, electric current or rays of light.
- Chinese medical practitioners diagnose the diseases, physiological disorders and injuries of patients and treat them using raw herbs and other medicines, dietary supplements or acupuncture.
- Herbalists advise patients on the use of herbs for the treatment of conditions such as arthritis, rheumatism, asthma, skin disorders and stomach ailments and may sell these herbs.
- Homeopaths diagnose illnesses and treat them by administering, in chemical or herbal form, a small dosage of the illness itself or by suggesting lifestyle changes.
- Reflexologists apply gentle finger pressure to specific spots on the clients' hands or feet to promote relaxation and better health and well-being.
- Rolfers systematically manipulate various parts of the body such as the legs and shoulders in order to realign the structure of the body and reduce chronic pain and stress.

Employment requirements

- Midwives require appropriate training which may be acquired through an undergraduate university degree program in midwifery or its equivalent and a period of supervised practical training.
- Registration with a regulatory body is required for midwives in Quebec, Ontario, Manitoba, Alberta, British Columbia, and the Northwest Territories.
- Acupuncturists require completion of a training program in acupuncture and may require some university undergraduate studies in science, training in a related health care discipline or work experience under the supervision of a registered acupuncturist.
- Registration with a regulatory body is required for acupuncturists in Quebec, Alberta and British Columbia.
- Chinese medical practitioners usually require completion of a program in traditional Chinese medicine which is available from certain medical schools abroad
 - or*
 - Some post-secondary education and a diploma in traditional Chinese medicine from a private institute.
- All other occupations in this unit group usually require completion of courses or training programs specific to their occupations and some supervised practical training.

Additional information

- Chinese medical practitioners may practise as acupuncturists.

3232 Midwives and Practitioners of Natural Healing

Classified elsewhere

- Massage therapists (in 3235 *Other Technical Occupations in Therapy and Assessment*)
- Naturopathic and osteopathic physicians (in 3123 *Other Professional Occupations in Health Diagnosing and Treating*)

3233 Licensed Practical Nurses

Licensed practical nurses provide nursing care usually under the direction of medical practitioners, registered nurses or other health team members. They are employed in hospitals, nursing homes, extended care facilities, rehabilitation centres, doctors' offices, clinics, companies, private homes and community health centres. Operating room technicians are included in this unit group.

Example titles

certified nursing assistant (CNA)

licensed nursing assistant

licensed practical nurse (L.P.N.)

operating room technician

registered nursing assistant (R.N.A.)

registered practical nurse (R.P.N.)

Main duties

Licensed practical nurses perform some or all of the following duties:

- Provide nursing services, within defined scope of practice, to patients based on patient assessment and care planning procedures
- Perform nursing interventions such as taking vital signs, applying aseptic techniques including sterile dressing, ensuring infection control, monitoring nutritional intake and conducting specimen collection
- Administer medication and observe and document therapeutic effects
- Provide pre-operative and post-operative personal and comfort care
- Monitor established respiratory therapy and intravenous therapy
- Monitor patients' progress, evaluate effectiveness of nursing interventions and consult with appropriate members of healthcare team
- Provide safety and health education to individuals and their families.

Operating room technicians perform some or all of the following duties:

- Prepare patients for surgery by washing, shaving and sterilizing the patients' operative areas
- Assist in surgery by laying out instruments, setting up equipment, assisting surgical teams with gowns and gloves and passing instruments to surgeons
- Clean and sterilize the operating room and instruments.

Employment requirements

- Completion of a vocational, college or other approved program for licensed practical nurses is required.
- Registration with a regulatory body is required in all provinces and territories.

- Completion of the Canadian Practical Nurse Registration Examination is required in all provinces and territories except Quebec.

- Operating room technicians require either additional academic training in operating room techniques or on-the-job training.

Additional information

- Working under the direction of a medical practitioner or registered nurse is not required for licensed practical nurses in all jurisdictions.

Classified elsewhere

- Home health aide (in 6471 *Visiting Homemakers, Housekeepers and Related Occupations*)
- *Nurse Aides, Orderlies and Patient Service Associates* (3413)

3234 Ambulance Attendants and Other Paramedical Occupations

This unit group includes workers who administer pre-hospital emergency medical care to patients with injuries or medical illnesses and transport them to hospitals or other medical facilities for further medical care. They are employed by private ambulance services, hospitals, fire departments, government departments and agencies, manufacturing firms, mining companies and other private sector establishments.

Example titles

advanced care paramedic
ambulance attendant
critical care paramedic
emergency medical attendant (EMA)
emergency medical care assistant
emergency medical responder
emergency medical technician (EMT)

emergency medical technician, paramedic (EMT – P)
emergency medical technologist, paramedic
paramedic
primary care paramedic
supervisor, ambulance services

Main duties

Workers in this unit group perform some or all of the following duties:

- Assess extent of injuries or medical illnesses of trauma victims, patients with respiratory disease and stress, overdose and poisoning victims, industrial accident victims and other ill or injured individuals to determine emergency medical treatment
- Administer pre-hospital emergency care, such as oxygen therapy, cardiopulmonary resuscitation (CPR), spinal immobilization, bandaging and splinting, to patients
- Establish and maintain intravenous treatment (IV), apply adjunctive equipment for ventilation and circulation complications, administer medications and provide other advanced emergency treatment to patients
- Transport patients by air, land or water to hospital or other medical facility for further medical care
- Document and record nature of injuries and illnesses and treatment provided
- Assist hospital personnel with provision of medical treatment, if necessary
- Maintain ambulances and emergency care equipment and supplies
- May train and supervise other workers in this unit group
- May assist with triage of emergency patients.

Employment requirements

- Completion of a college, hospital-based or other recognized program in emergency medical technology ranging from two to twenty-four months or courses in emergency health care and Supervised practical training are required.
- Licensure according to type and length of training by a regulatory body is required in Prince Edward Island, Ontario, Saskatchewan, Alberta and British Columbia.
- Those operating emergency vehicles require an appropriate class of licence.

Classified elsewhere

- *Other Assisting Occupations in Support of Health Services (3414)*

3235 Other Technical Occupations in Therapy and Assessment

This unit group includes workers, not elsewhere classified, who perform various technical therapy and assessment functions. Some may assist professionals such as audiologists, speech-language pathologists, ophthalmologists and physiotherapists. They are employed in hospitals, clinics, extended care facilities, rehabilitation centres, educational institutions and in the private practices of the professionals they assist. Massage therapists may also be self-employed.

Example titles

audiology technician
audiometric assistant
audiometric technician
audio prosthete
hearing aid consultant
massage therapist (MT)
ophthalmic assistant

ophthalmic technician
ophthalmic technologist
physical rehabilitation technician
physiotherapy technician
speech technician
speech therapist aide
speech therapy aide

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Audio prosthetists examine clients to determine appropriate type of hearing aid; may test patient's hearing; take ear impressions for use in the manufacture of the devices; fit and adjust hearing aids; and perform follow-up examinations and readjustments.
- Audiometric assistants administer, under the supervision of audiologists, tests such as speech reception and speech discrimination to determine the hearing thresholds of patients; and record these test results.
- Communication assistants carry out remedial programs, under the supervision of speech-language pathologists, to rehabilitate patients with communicative disorders.
- Massage therapists assess clients by conducting range of motion and muscle testing and propose treatment plans; treat soft tissues and joints of the body through soft tissue manipulation, hydrotherapy, remedial exercise programs and client self-help programs; provide courses of treatment for medical conditions and injuries or wellness maintenance; maintain records of treatments given; and may work with other health care professionals when appropriate.
- Ophthalmic medical assistants operate ophthalmic testing and measuring instruments to aid ophthalmologists to assess patients' vision; record test results; assist ophthalmologists in office surgery; and administer eye drops, ointments and medications as directed by ophthalmologists.

- Physical rehabilitation technicians carry out, under physiotherapists' direction, treatment programs such as massage, thermotherapy, traction and hydrotherapy to rehabilitate injured or disabled individuals.

Employment requirements

- Audio prosthetists require completion of a two- or three-year college program in audio prosthetics, including a period of supervised training.
- Licensure with a regulatory body is required for audio prosthetists in Quebec, Alberta and British Columbia.
- Audiometric and communication assistants require completion of a 12- to 18-month college program in communicative disorders
 - or
 - Some post-secondary education and on-the-job training.
- Massage therapists usually require completion of an 18- to 24-month or 18- to 36 month program in massage therapy from an accredited school and supervised practical training.
- Registration with a regulatory body is required for massage therapists in Newfoundland and Labrador, Ontario and British Columbia.
- Ophthalmic medical assistants require completion of a nine-month college program or a 24- to 30-month hospital-based training program in ophthalmic techniques and procedures
 - or
 - A minimum of one year of supervised practical training under an ophthalmologist and completion of an approved ophthalmic assistant home study program.

3235 Other Technical Occupations in Therapy and Assessment

- Physical rehabilitation technicians require completion of a three-year college program in physical rehabilitation therapy and supervised practical training.

Additional information

- Currently, the qualifications of physical rehabilitation technicians are recognized only in the province of Quebec.

Classified elsewhere

- *Medical Technologists and Technicians (Except Dental Health)* (321)
- *Other Technical Occupations in Health Care (Except Dental)* (323)
- Physical therapy aides or chiropractic aides (in 3414 *Other Assisting Occupations in Support of Health Services*)

3411 Dental Assistants

Dental assistants assist dentists during the examination and treatment of patients and perform clerical functions. Dental assistants work primarily in dentists' offices, or they may be employed by government and educational institutions.

Example titles

certified dental assistant

certified intra-oral dental assistant

dental assistant

registered dental assistant

Main duties

Dental assistants perform some or all of the following duties:

- Prepare patients for dental examination and assist the dentist during the examination
- Sterilize and maintain instruments and equipment
- Prepare dental instruments and filling materials
- Educate patients concerning oral hygiene
- Schedule patient appointments and record dental procedures performed
- Invoice patients for dental services
- Order dental and office supplies
- Take and develop X-rays
- Polish teeth and clinical crowns and apply fluoride and sealant
- Take preliminary impressions for diagnostic casts
- Fabricate temporary crowns and restorations.

Employment requirements

- Completion of a three-month to one-year college or other program in dental assistance
or
Completion of secondary school with on-the-job training is required.
- Licensing is not mandatory, but is required to perform intra-oral duties in all provinces except Quebec.

Additional information

- In most provinces, there are two levels of dental assistants: Level I – chair-side assistant and Level II – intra-oral assistant. Progression from Level I to Level II is possible with appropriate training and licensure.

Classified elsewhere

- *Dental Hygienists and Dental Therapists* (3222)
- *Dental Technologists, Technicians and Laboratory Bench Workers* (3223)

3413 Nurse Aides, Orderlies and Patient Service Associates

Nurse aides, orderlies and patient service associates assist nurses, hospital staff and physicians in the basic care of patients. They are employed in hospitals, nursing homes, and other health care facilities.

Example titles

health care aide
hospital attendant
long term care aide
nurse aide
nursing attendant

orderly
patient care aide
patient service associate
psychiatric aide

Main duties

Nurse aides, orderlies and patient service associates perform some or all of the following duties:

- Answer call signals; supply and empty bed pans; bathe, dress and groom patients; serve meal trays, feed or assist in feeding of patients and assist patients with menu selection; lift, turn or massage patients; shave patients prior to operations; supervise patients' exercise routines, set up and provide leisure activities for patients, and accompany patients on outside recreational activities; and perform other duties related to patient care
- Take patients' blood pressure, temperature and pulse; report or record fluid intake and output; observe or monitor patients' status and document patient care on charts; collect specimens such as urine, faeces or sputum; administer suppositories, colonic irrigations and enemas and perform other procedures as directed by nursing and hospital staff
- Transport patients by wheelchair or stretcher for treatment or surgery
- Carry messages, reports, requisitions and specimens from one department to another
- Make beds and maintain patients' rooms
- Maintain inventory of supplies
- May perform maintenance tasks such as assisting with the set-up and maintenance of traction equipment, cleaning or sterilizing equipment, maintaining and repairing equipment, and assembling, setting-up and operating job-related equipment.

Employment requirements

- Some secondary school education and on-the-job training
 - or
- A nursing aide or health care aide college or private institutional program, or a college nursing orderly program and supervised practical training are required.
- Some health care facilities may also require completion of specialized courses such as CPR (cardiopulmonary resuscitation), first aid and food handling/sterile processing.

Classified elsewhere

- *Licensed Practical Nurses (3233)*
- *Other Assisting Occupations in Support of Health Services (3414)*
- Personal care attendants – home care (in 6471 *Visiting Homemakers, Housekeepers and Related Occupations*)

3414 Other Assisting Occupations in Support of Health Services

This unit group includes workers who provide services and assistance to health care professionals and other health care staff. They are employed in hospitals, medical clinics, offices of health care professionals, nursing homes, optical retail stores and laboratories, pharmacies and medical pathology laboratories.

Example titles

autopsy assistant
blood donor clinic assistant
cast room technician
central supply aide
chiropractic assistant
clinical laboratory helper
lens grinder, ophthalmic
morgue attendant
occupational therapy assistant

ophthalmic laboratory technician – retail
optical laboratory assistant
optometrist assistant
orthopedic technologist
pharmacy assistant
physiotherapy assistant
rehabilitation assistant
therapy assistant

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Orthopedic technologists assist orthopedic surgeons in the treatment of orthopedic diseases and injuries by applying and adjusting casts, splints, bandages and other orthopedic devices; assisting in the application, maintenance and adjustment of traction equipment; cleaning and dressing wounds; and removing casts, sutures, staples and pins. They also instruct patients and their families and other health care professionals with respect to orthopedic matters.
- Therapy assistants prepare and maintain equipment and supplies, assist patients as directed by health care professionals such as physiotherapists, occupational therapists and chiropractors and may perform routine office functions.
- Optical/ophthalmic laboratory technicians and assistants operate laboratory equipment to grind, cut, polish and edge lenses for eyeglasses according to prescriptions received and fit lenses into frames; make minor repairs for customers such as replacing frame screws or straightening frames; and maintain and repair optical laboratory equipment or machinery.
- Pharmacy assistants assist pharmacists by compounding, packaging and labelling pharmaceutical products and by maintaining prescription records and inventories of medications and pharmaceutical products.
- Central supply aides collect and sort soiled supplies and instruments from hospital departments; operate machines such as instrument washers, sonic sinks, cart washers and steam autoclaves to clean, reprocess and sterilize these supplies for re-use; and assemble packs of sterile supplies and instruments for delivery to hospital departments.
- Blood donor clinic assistants set up and dismantle equipment; prepare and maintain cleanliness of collection areas; maintain supplies; record information on donors; monitor donors throughout procedure and assist with post-donation care and donor reaction care as assigned under supervision of a registered nurse; and label and process donated blood.
- Morgue attendants assist pathologists at autopsies by laying out surgical instruments; preparing solutions for preservation of specimens; transferring bodies from morgue to examining table; removing organs and tissue specimens, as instructed by attending pathologist, and placing them in preservative solutions; and cleaning and sewing up bodies for release to funeral home.

Employment requirements

- Orthopedic technologists usually require completion of secondary school *and* Several months of on-the-job training *or* A college orthopedic technologist program.
- Registration with the Canadian Society of Orthopaedic Technologists is available and usually required by employers.

3414 Other Assisting Occupations in Support of Health Services

- Health care courses or short-term college programs related to the work of medical assistants, such as occupational therapy assistant/physiotherapy assistant programs or a program in central supply service techniques, are available and may be required by employers.
- Pharmacy assistants require completion of secondary school
and
Several months of on-the-job training
or
A five- to nine-month college program in pharmaceutical services.
- Completion of secondary school and several months of on-the-job training are usually required for other assisting occupations in this unit group.

Additional information

- Occupational therapy assistants (OTA) and physiotherapy assistants (PTA) receive training through a single OTA/PTA program in some community colleges.

Classified elsewhere

- Eyeglass frame polisher (in 9517 *Other Products Machine Operators*)
- Medical technologists and technicians (in 321 *Medical Technologists and Technicians (Except Dental Health)*)
- Operating room technicians (in 3233 *Licensed Practical Nurses*)
- *Other Technical Occupations in Therapy and Assessment* (3235)
- Pathologists' assistants (in 3211 *Medical Laboratory Technologists and Pathologists' Assistants*)



OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES

Major Group 92

PROCESSING, MANUFACTURING AND UTILITIES SUPERVISORS AND SKILLED OPERATORS

921 Supervisors, Processing Occupations

- 9211 Supervisors, Mineral and Metal Processing
- 9212 Supervisors, Petroleum, Gas and Chemical Processing and Utilities
- 9213 Supervisors, Food, Beverage and Tobacco Processing
- 9214 Supervisors, Plastic and Rubber Products Manufacturing
- 9215 Supervisors, Forest Products Processing
- 9216 Supervisors, Textile Processing

922 Supervisors, Assembly and Fabrication

- 9221 Supervisors, Motor Vehicle Assembling
- 9222 Supervisors, Electronics Manufacturing
- 9223 Supervisors, Electrical Products Manufacturing
- 9224 Supervisors, Furniture and Fixtures Manufacturing
- 9225 Supervisors, Fabric, Fur and Leather Products Manufacturing
- 9226 Supervisors, Other Mechanical and Metal Products Manufacturing
- 9227 Supervisors, Other Products Manufacturing and Assembly

923 Central Control and Process Operators in Manufacturing and Processing

- 9231 Central Control and Process Operators, Mineral and Metal Processing
- 9232 Petroleum, Gas and Chemical Process Operators
- 9233 Pulping Control Operators
- 9234 Papermaking and Coating Control Operators

Major Group 94/95

PROCESSING AND MANUFACTURING MACHINE OPERATORS AND ASSEMBLERS

941 Machine Operators and Related Workers in Metal and Mineral Products Processing

- 9411 Machine Operators, Mineral and Metal Processing
- 9412 Foundry Workers
- 9413 Glass Forming and Finishing Machine Operators and Glass Cutters
- 9414 Concrete, Clay and Stone Forming Operators
- 9415 Inspectors and Testers, Mineral and Metal Processing

942 Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing

- 9421 Chemical Plant Machine Operators
- 9422 Plastics Processing Machine Operators
- 9423 Rubber Processing Machine Operators and Related Workers
- 9424 Water and Waste Plant Operators

943 Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing

- 9431 Sawmill Machine Operators
- 9432 Pulp Mill Machine Operators
- 9433 Papermaking and Finishing Machine Operators
- 9434 Other Wood Processing Machine Operators
- 9435 Paper Converting Machine Operators
- 9436 Lumber Graders and Other Wood Processing Inspectors and Graders

944 Machine Operators and Related Workers in Textile Processing

- 9441 Textile Fibre and Yarn Preparation Machine Operators
- 9442 Weavers, Knitters and Other Fabric-Making Occupations
- 9443 Textile Dyeing and Finishing Machine Operators
- 9444 Textile Inspectors, Graders and Samplers

945 Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing

- 9451 Sewing Machine Operators
- 9452 Fabric, Fur and Leather Cutters
- 9453 Hide and Pelt Processing Workers
- 9454 Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing

946 Machine Operators and Related Workers in Food, Beverage and Tobacco Processing

- 9461 Process Control and Machine Operators, Food and Beverage Processing
- 9462 Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers
- 9463 Fish Plant Workers
- 9464 Tobacco Processing Machine Operators
- 9465 Testers and Graders, Food and Beverage Processing

947 Printing Machine Operators and Related Occupations

- 9471 Printing Machine Operators
- 9472 Camera, Platemaking and Other Prepress Occupations
- 9473 Binding and Finishing Machine Operators
- 9474 Photographic and Film Processors

948 Mechanical, Electrical and Electronics Assemblers

- 9481 Aircraft Assemblers and Aircraft Assembly Inspectors
- 9482 Motor Vehicle Assemblers, Inspectors and Testers
- 9483 Electronics Assemblers, Fabricators, Inspectors and Testers
- 9484 Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing
- 9485 Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
- 9486 Mechanical Assemblers and Inspectors
- 9487 Machine Operators and Inspectors, Electrical Apparatus Manufacturing

949 Other Assembly and Related Occupations

- 9491 Boat Assemblers and Inspectors
- 9492 Furniture and Fixture Assemblers and Inspectors
- 9493 Other Wood Products Assemblers and Inspectors
- 9494 Furniture Finishers and Refinishers
- 9495 Plastic Products Assemblers, Finishers and Inspectors
- 9496 Painters and Coaters - Industrial
- 9497 Plating, Metal Spraying and Related Operators
- 9498 Other Assemblers and Inspectors

951 Machining, Metalworking, Woodworking and Related Machine Operators

- 9511 Machining Tool Operators
- 9512 Forging Machine Operators
- 9513 Woodworking Machine Operators
- 9514 Metalworking Machine Operators
- 9516 Other Metal Products Machine Operators
- 9517 Other Products Machine Operators

Major Group 96

LABOURERS IN PROCESSING, MANUFACTURING AND UTILITIES

961 Labourers in Processing, Manufacturing and Utilities

- 9611 Labourers in Mineral and Metal Processing
- 9612 Labourers in Metal Fabrication
- 9613 Labourers in Chemical Products Processing and Utilities
- 9614 Labourers in Wood, Pulp and Paper Processing
- 9615 Labourers in Rubber and Plastic Products Manufacturing
- 9616 Labourers in Textile Processing
- 9617 Labourers in Food, Beverage and Tobacco Processing
- 9618 Labourers in Fish Processing
- 9619 Other Labourers in Processing, Manufacturing and Utilities

9211 Supervisors, Mineral and Metal Processing

Supervisors, mineral and metal processing, supervise and co-ordinate the activities of workers in the following groups: *Central Control and Process Operators, Mineral and Metal Processing* (9231), *Machine Operators and Related Workers in Metal and Mineral Products Processing* (941) and *Labourers in Mineral and Metal Processing* (9611). They are employed in mineral ore and metal processing plants such as copper, lead and zinc refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries, cement processing plants, clay, glass and stone processing plants and foundries.

Example titles

blast furnace foreman/woman	lime preparation foreman/woman
brick and tile foreman/woman	melting and roasting department supervisor
cement processing supervisor	ore milling supervisor
coremaking foreman/woman	roll shop operations coach – steel mill
die casting supervisor	shift co-ordinator, steel mill
foreman/woman, lead refining	supervisor, glass cutters

Main duties

Supervisors mineral and metal processing perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers engaged in the following duties: operating single or multi-function mineral and metal processing machinery and equipment; operating mouldmaking and coremaking machines or manually make moulds and cores; operating glass process control, forming and finishing machines; operating concrete, clay and stone forming and finishing machines; and operating cement process control and machines and equipment
- Establish methods to meet work schedules and co-ordinate work activities with units
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity and product quality
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machines and equipment.

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in metallurgy, sciences or a related field may be required for some occupations in this unit group.
- Several years of experience as a worker in the unit or department being supervised are usually required.

Classified elsewhere

- *Supervisors, Mining and Quarrying* (8221)
- *Supervisors, Other Mechanical and Metal Products Manufacturing* (9226)

9212 Supervisors, Petroleum, Gas and Chemical Processing and Utilities

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Petroleum, Gas and Chemical Process Operators* (9232), *Chemical Plant Machine Operators* (9421), *Labourers in Chemical Products Processing and Utilities* (9613), *Water and Waste Plant Operators* (9424), *Stationary Engineers and Auxiliary Equipment Operators* (7351) and *Power Systems and Power Station Operators* (7352). They are employed by petroleum and natural gas processing, pipeline and petrochemical companies, chemical and pharmaceutical companies, water and waste treatment utilities and in a range of other industries and institutions.

Example titles

chemical processing supervisor

foreman/woman, chemical

foreman/woman, cosmetics processing

foreman/woman, natural gas plant

foreman/woman, water purification plant

paint processing foreman/woman

production supervisor, pharmaceuticals

production supervisor, specialty chemicals

steam engineer leader

supervisor, petroleum refining

supervisor, pipeline operation

supervisor, power station

supervisor, sewage treatment plant

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who operate petroleum refineries, chemical plants, water and waste disposal plants and equipment, pipelines, heating plants and power stations and systems
- Identify, investigate, correct and document potential environmental and safety problems
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve productivity and product quality
- Provide information for maintenance plans to ensure that maintenance and production objectives are met
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policy
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports and develop and manage operating budget for area of responsibility
- May also supervise, co-ordinate and schedule the activities of trades workers, labourers or other workers.

• Post-secondary education in chemical processing or sciences may be required for some occupations in this unit group.

- Several years of experience as a senior operator in the same company or plant are usually required.
- Some occupations in this unit group may require a specific licence or certification, such as a stationary engineer's licence or refrigeration certification.

Additional information

- There is some mobility between occupations with similar technological or licensing requirements within this group.

Classified elsewhere

- Supervisors of telecommunications workers, power utility electricians and power line workers (in 7212 *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)

Employment requirements

- Completion of secondary school is required.

9213 Supervisors, Food, Beverage and Tobacco Processing

Supervisors in this unit group supervise and co-ordinate the activities of workers who operate processing machines, and package or grade food, beverage and tobacco products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food, beverage and tobacco processing establishments.

Example titles

brewer supervisor	supervisor, fish processing
foreman/woman, poultry graders	supervisor, food product testers
HACCP co-ordinator	supervisor, meat packing
packaging supervisor	supervisor, tobacco processing
production supervisor – food and beverage processing	supervisor, vegetable packing
supervisor, bottling	team supervisor, flour milling

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who process, package, test and grade food, beverage and tobacco products
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policy
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports.

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in microbiology or chemistry may be required for some positions in this group.
- Several years of experience in the food, beverage or tobacco processing industry are required.
- Hazard analysis critical control point (HACCP) co-ordinators require HACCP certification and several years of experience in quality assurance of food production.

Classified elsewhere

- *Machine Operators and Related Workers in Food, Beverage and Tobacco Processing* (946)
- Managers of food, beverage and tobacco processing (in 0911 *Manufacturing Managers*)
- Supervisors of meat and fish inspectors (in 2222 *Agricultural and Fish Products Inspectors*)

9214 Supervisors, Plastic and Rubber Products Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers who operate processing machines and who fabricate, assemble and inspect rubber or plastic products. They are employed by rubber and plastic products manufacturing companies and in plastic parts divisions of other manufacturing companies.

Example titles

foreman/woman, blow moulding
foreman/woman, calendering – rubber and plastic manufacturing
foreman/woman, extruding – rubber and plastic manufacturing

supervisor, injection moulding – plastic products manufacturing
supervisor, plastic products manufacturing
supervisor, rubber products manufacturing
supervisor, tire building

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of production workers who operate processing machines and who fabricate, assemble, finish or inspect plastic or rubber parts and products
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machines and equipment.

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in sciences or plastics technology may be required for some positions in this group.
- Several years of experience as a machine operator or an assembler in rubber or plastic products manufacturing is usually required.

Classified elsewhere

- *Labourers in Rubber and Plastic Products Manufacturing* (9615)
- *Plastic Products Assemblers, Finishers and Inspectors* (9495)
- *Plastics Processing Machine Operators* (9422)
- *Rubber Processing Machine Operators and Related Workers* (9423)

9215 Supervisors, Forest Products Processing

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following groups: *Pulping Control Operators* (9233), *Papermaking and Coating Control Operators* (9234), *Labourers in Wood, Pulp and Paper Processing* (9614), and *Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing* (943). They are employed by pulp and paper companies, paper converting companies, sawmills, planing mills, wood treatment plants, waferboard plants and other wood processing companies.

Example titles

coating room foreman/woman – pulp and paper
foreman/woman, lumber grading
foreman/woman, plywood making
foreman/woman, shingle mill
foreman/woman, waferboard
foreman/woman, wood treating plant
paper machine foreman/woman

paper mill foreman/woman
pulp mill foreman/woman
sawmill foreman/woman
shift operating supervisor – pulp and paper
supervisor, paper converting
tour foreman/woman – pulp and paper

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who operate pulp and paper mills, paper converting mills, sawmills, planing mills, plywood, waferboard and other wood and paper products mills
- Ensure that systems and equipment are operating efficiently and that proper maintenance and repairs are performed
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions and administer the collective agreement
- Prepare production and other reports
- Monitor safety conditions
- May set up machines and equipment.

Employment requirements

- Completion of secondary school is required.
- A college diploma in pulp and paper technology or a related discipline may be required for some pulp and paper supervisor positions.

- Several years of some combination of formal and on-the-job training are provided.
- Several years of experience in the most senior occupation supervised are often required.
- Certificates, such as lumber grading and industrial first aid, and a competency certificate in natural gas may be required.

Additional information

- Mobility is possible between positions employing similar technology or producing similar products.
- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Manufacturing Managers* (0911)

9216 Supervisors, Textile Processing

Supervisors in this unit group supervise and co-ordinate the activities of workers engaged in processing fibre into yarn or thread; weaving, knitting or fabricating textile products; bleaching, dyeing and finishing textile products; and inspecting textile products. They are employed by textile companies.

Example titles

dye room supervisor
finishing supervisor – textiles
foreman/woman – textile processing
spinning supervisor – textiles

supervisor, knitting
tufting supervisor – textiles
weave room supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of production workers who operate machines to process fibre, yarn, thread and textiles; and bleach, dye, finish or inspect textiles
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machines and equipment.

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in textile technology or a related field may be required for some positions in this group.
- Several years of experience as a textile machinery mechanic or repairer, textile technician or operator in a process such as weaving, tufting or dyeing are usually required.
- Experience may be required in a specific process or with a specific type or model of equipment.

Additional information

- There is mobility among jobs in this group.
- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Machine Operators and Related Workers in Textile Processing* (944)
- Master dyers and textile colour technologists (in 2211 *Chemical Technologists and Technicians*)
- Supervisors in clothing and apparel manufacturing (in 9225 *Supervisors, Fabric, Fur and Leather Products Manufacturing*)
- Technologists and technicians in textile manufacturing (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- *Textile Machinery Mechanics and Repairers* (7317)

9221 Supervisors, Motor Vehicle Assembling

Supervisors in this unit group supervise and co-ordinate the activities of workers in motor vehicle production departments. They are employed in plants which manufacture automobiles, vans and light trucks.

Example titles

area co-ordinator – motor vehicle manufacturing
assembly foreman/woman – motor vehicle
manufacturing
foreman/woman – motor vehicle manufacturing
general supervisor, assembly – motor vehicle
manufacturing

supervisor, assembly – motor vehicle
manufacturing
zone supervisor, assembly – motor vehicle
manufacturing

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers in motor vehicle manufacturing production departments such as body shop, chassis, paint, trim and hardware and final assembly
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve productivity and product quality
- Train staff in job duties, safety procedures and company policies
- Requisition materials and supplies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Motor Vehicle Assemblers, Inspectors and Testers (9482)*
- *Supervisors of engine assemblers (in 9226 Supervisors, Other Mechanical and Metal Products Manufacturing)*

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in engineering, sciences, business or other related discipline is usually required.
- Several years of experience as a production worker in motor vehicle manufacturing are required.

9222 Supervisors, Electronics Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers who assemble, fabricate, test, repair and inspect electronic parts, components and systems. They are employed in electronics manufacturing plants.

Example titles

assembly supervisor
foreman/woman, electronic assembly
foreman/woman, final assembly and test
foreman/woman, printed circuit board fabrication

production supervisor – electronics manufacturing supervisor, assembly and test systems test foreman/woman test supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who assemble, fabricate, inspect and test electronic and electromechanical assemblies, subassemblies, parts and components
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend work measures to improve productivity
- Requisition materials and supplies
- Train workers in job duties, safety procedures and company policies and recommend personnel actions such as hirings and promotions
- Ensure safety rules and regulations are followed
- Prepare production and other reports
- May set up machines and equipment
- Supervise, co-ordinate and schedule the activities of related helpers and labourers.

Classified elsewhere

- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- *Electronics Assemblers, Fabricators, Inspectors and Testers* (9483)
- *Electronic Service Technicians (Household and Business Equipment)* (2242)
- *Supervisors, Electrical Products Manufacturing* (9223)

Employment requirements

- Completion of secondary school is required.
- Several years of experience as an electronics assembler, fabricator, inspector or tester are usually required.
- Post-secondary education in electronics or a related discipline is required.

9223 Supervisors, Electrical Products Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers who assemble, fabricate and inspect electrical components, appliances, motors and industrial equipment. They are employed by companies that manufacture electrical products.

Example titles

foreman/woman, electrical motor assembly

supervisor, electrical appliance assembly

foreman/woman, electrical transformer assembly

supervisor, electrical equipment manufacturing

foreman/woman, switchgear assembly

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who assemble, fabricate and inspect various types of electrical apparatus and equipment such as electrical appliances, batteries, electric motors, transformers and generators and electrical switchgear and control equipment
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend work measures to improve productivity
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machines and equipment.

Classified elsewhere

- *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations (7212)*
- *Supervisors, Electronics Manufacturing (9222)*

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education in electrical or manufacturing technology or other related discipline may be required for some positions in this group.
- Several years of experience as an assembler, inspector or lead hand are required.

9224 Supervisors, Furniture and Fixtures Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers who manufacture furniture and fixtures made of wood or other materials. They are employed in furniture and fixtures manufacturing establishments.

Example titles

foreman/woman, desk assembly

supervisor, furniture finishers

foreman/woman, furniture assembly

supervisor, woodworking machine operators

laminating foreman/woman

woodworking machine operators foreman/woman

supervisor, furniture and fixture manufacturing

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who assemble furniture and fixtures of any materials, operate woodworking machines and finish furniture to specified colour or finish
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend work measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policy
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports.

Employment requirements

- Completion of secondary school is usually required.
- Experience as a furniture and fixture assembler, woodworking machine operator, cabinetmaker or furniture finisher, is usually required.

Classified elsewhere

- Supervisors of millwork and wood product manufacturing other than furniture and fixture, and wood machining (in 9227 *Supervisors, Other Products Manufacturing and Assembly*)

9225 Supervisors, Fabric, Fur and Leather Products Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Sewing Machine Operators* (9451), *Fabric, Fur and Leather Cutters* (9452), *Hide and Pelt Processing Workers* (9453) and *Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing* (9454). They are employed by clothing and textile manufacturers, tanneries and other manufacturers of fabric products.

Example titles

boot and shoe foreman/woman
canvas products manufacturing foreman/woman
cutting department foreman/woman, fabric
embroidery supervisor – fabric products
fur dressing foreman/woman

hat and cap makers foreman/woman
sample room foreman/woman, leather products
sewing machine operators supervisor
stitching department supervisor
tannery foreman/woman

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who cut or stitch fabric, fur or leather garments and other products in the manufacturing process
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Requisition materials and supplies
- Resolve work problems and recommend measures to improve productivity and product quality
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports.

Additional information

- There is little mobility among the various types of supervisors in this group.

Classified elsewhere

- *Supervisors, Textile Processing* (9216)
- *Tailors, Dressmakers, Furriers and Milliners* (7342)

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a worker in the unit group being supervised are required.

9226 Supervisors, Other Mechanical and Metal Products Manufacturing

Supervisors in this unit group supervise and co-ordinate the activities of workers who fabricate, assemble and inspect mechanical and metal products, such as aircraft and aircraft parts, heavy trucks, buses, trailers, motor vehicle engines, transmissions, heating equipment, commercial refrigeration and similar metal products. They are employed by a wide variety of manufacturing companies.

Example titles

aircraft assembly foreman/woman
engine assembly foreman/woman (except aircraft)
foreman/woman, metalworking machine operators
foreman/woman, mobile home assembly

shipyard painter foreman/woman
supervisor, helicopter assembly
supervisor, snowmobile assembly
truck trailer assembly foreman/woman

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule activities of workers who assemble and inspect products such as aircraft, buses, heavy trucks, transmissions, automobile engines and refrigeration and heating equipment
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machinery and equipment.

Employment requirements

- Completion of secondary school is usually required.
- Post-secondary education may be required for some occupations in this group.
- Several years of experience as an assembler or inspector in the same company are usually required.

Classified elsewhere

- Aircraft engine assembly and machine fitters' supervisors (in 7216 *Contractors and Supervisors, Mechanic Trades*)
- *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades* (7214)
- *Supervisors, Electrical Products Manufacturing* (9223)
- *Supervisors, Motor Vehicle Assembling* (9221)

9227 Supervisors, Other Products Manufacturing and Assembly

This unit group includes supervisors, not elsewhere classified, who supervise and co-ordinate the activities of workers who assemble, fabricate and inspect a variety of products, such as jewellery, clocks and watches, millwork, sporting goods, toys and other miscellaneous products. They are employed in a wide variety of manufacturing companies.

Example titles

foreman/woman, bicycle assembly
foreman/woman, clock and watch assembly
foreman/woman, jewellery manufacturing
foreman/woman, millwork assembly

supervisor, millwork assembly
supervisor, silverware manufacturing
supervisor, sports equipment assembly
supervisor, toy manufacturing

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule activities of workers who assemble, fabricate and inspect products, such as jewellery, clocks, watches, bicycles, millwork, sporting goods and toys
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train workers in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machinery and equipment.

Additional information

- There is little mobility between different types of supervisors in this unit group.

Classified elsewhere

- Supervisors of woodworking machine operators (in 9224 *Supervisors, Furniture and Fixtures Manufacturing*)

Employment requirements

- Completion of secondary school may be required.
- Several years of experience as an assembler or inspector in the same company are usually required.

9231 Central Control and Process Operators, Mineral and Metal Processing

Central control and process operators, mineral and metal processing, operate and monitor multi-function process control machinery and equipment to control the processing of mineral ores, metals or cement. They are employed in mineral ore and metal processing plants such as copper, lead and zinc refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries and cement processing plants.

Example titles

blast furnace operator
central control caster
central control room operator
chief flotation operator

console operator – cement manufacturing
pelletizing control operator
roaster operator
rolling mill control operator

Main duties

Central control and process operators, mineral and metal processing, perform some or all of the following duties:

- Co-ordinate and monitor the operation of a particular aspect of mineral ore, metal and cement processing production through control panels, computer terminals or other control systems, usually from a central control room
- Operate multi-function central process control machinery to grind, separate, filter, melt, roast, treat, refine or otherwise process mineral ores
- Observe computer printouts, video monitors and gauges to verify specified processing conditions and to make necessary adjustments
- Co-ordinate and supervise production crew such as machine and process operators, tenders, assistants and helpers
- Start up and shut down the production system in cases of emergency or as required by schedule
- Provide or organize training for members of production crew
- Maintain shift log of production and other data and prepare production and other reports.

Employment requirements

- Completion of secondary school is required.
- A college diploma may be required for some positions in this group.
- On-the-job training is provided.
- Several years of experience as a machine or process operator, usually in the same company or production department, are required.

Additional information

- There is little mobility among the various types of central control and process operators within the mineral and metal processing industry.
- With experience, central control and process operators may progress to supervisory positions in mineral and metal processing.

Classified elsewhere

- Foundry furnace operators and casters (in 9412 *Foundry Workers*)
- *Machine Operators, Mineral and Metal Processing* (9411)
- *Supervisors, Mineral and Metal Processing* (9211)

9232 Petroleum, Gas and Chemical Process Operators

Petroleum, gas and chemical process operators monitor and operate petroleum, petrochemical and chemical plants and monitor, adjust and maintain processing units and equipment in these plants. They are employed by petroleum and natural gas processing, pipeline and petrochemical companies, industrial, agricultural and specialty chemical and pharmaceutical companies.

Example titles

acid plant operator
cell room operator, chlor-alkali plant
chemical process operator
chief operator – chemical processing
fractionator operator
gas field operator
gas plant operator
gas recovery operator
lead operator – chemical processing
liquefaction plant operator

master operator – chemical processing
panel operator – chemical processing
petroleum process operator
pharmaceutical processing operator
pipeline compressor station operator
process technician
refinery operator
senior operating technician
senior operator – chemical processing

Main duties

Petroleum, gas and chemical process operators perform some or all of the following duties:

- Operate electronic or computerized control panel from a central control room to monitor and optimize physical and chemical processes for several processing units
- Control process start-up, shut-down and troubleshooting
- Monitor outside process equipment
- Adjust equipment, valves, pumps and controls and process equipment
- Authorize or co-sign maintenance work orders
- Shut down, isolate and prepare process units or production equipment for maintenance
- Sample products, perform tests, record data, carry out statistical process control on process operations, and write production logs
- Develop operator procedures for normal operation, start-up or shut-down of unit
- Participate in safety audits and programs and provide emergency response when required
- Ensure adherence to safety and environmental regulations
- May rotate between different processing units during shift cycles
- May work in a team with shared supervisory responsibilities and participate in training other workers
- May be cross-trained in a skilled trade and work in the trade during shift cycles.

Employment requirements

- Completion of secondary school is required. Mathematics, chemistry and physics subjects are often specified.
- A college diploma in process operation, sciences or a related subject may be required for some positions.
- Petroleum and chemical process operators and process technicians require completion of several years of formal company training.
- Experience as a petroleum or chemical process operator in all the operating units controlled by the central control room is required for chief operators.
- Company certification as a petroleum process operator or technician may be required.
- A provincial stationary engineer licence, compressor operator or refrigeration certificate may be required when certain kinds of equipment are included in the process.
- Certification in the transportation of dangerous goods (TDG), first aid, firefighting, or workplace hazardous materials information system (WHMIS) may be required.

Additional information

- There is considerable mobility among jobs within a company, often as part of a formal development or training program.
- Mobility to other petroleum or chemical processing plants is possible, but may be limited by the usual practice of training and promoting workers from within the establishment.

9232 Petroleum, Gas and Chemical Process Operators

- Progression to supervisory or managerial positions is possible with experience.
- Occupations in this unit group may involve exposure to hazards of toxic, flammable or explosive chemicals and personal protective equipment may be required.

Classified elsewhere

- *Chemical Plant Machine Operators* (9421)
- *Supervisors, Petroleum, Gas and Chemical Processing and Utilities* (9212)

9233 Pulping Control Operators

Pulping control operators operate and monitor multi-function process control machinery and equipment to control the processing of wood, scrap pulp, recyclable paper and other cellulose materials in the production of pulp. They are employed by pulp and paper companies.

Example titles

bleach plant operator
cook – pulp and paper
digester operator
pulping control operator

pulping group operator – pulp and paper
pulping technician
thermomechanical pulp operator

Main duties

Pulping control operators perform some or all of the following duties:

- Co-ordinate and monitor the operation of screening equipment, washing equipment, digesters, mixing tanks and other pulp processing equipment from automated panel boards in central control room to control the processing of wood, scrap pulp, recyclable paper and other cellulose materials
- Observe panel indicators, gauges, video monitors and other instruments from central control room to detect equipment malfunctions and ensure pulp processes are operating within prescribed production limits
- Analyze instrument readings and production test samples and make adjustments, or direct pulp machine operators to make adjustments to pulp production process and equipment as required
- Complete and maintain production reports.

Employment requirements

- Completion of secondary school is required.
- A college or other program in forest products processing or a related subject may be required.
- Completion of several weeks of formal company training and several months of on-the-job training is required.
- Several years of experience as a pulp mill machine operator within the same company is usually required.
- A certificate in industrial first aid may be required.

Additional information

- There is limited mobility among jobs within this occupational group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Papermaking and Coating Control Operators* (9234)
- *Pulp Mill Machine Operators* (9432)
- *Supervisors, Forest Products Processing* (9215)

9234 Papermaking and Coating Control Operators

Papermaking and coating control operators operate and monitor multi-function process control machinery and equipment to control the processing of paper, paper pulp and paperboard. They are employed by pulp and paper companies.

Example titles

back tender, paper machine
control operator, paper machine
fourdrinier machine operator

panelboard operator – pulp and paper
paper-coating machine operator
paper machine operator

Main duties

Papermaking and coating control operators perform some or all of the following duties:

- Operate, co-ordinate and monitor the operation of papermaking and papercoating process equipment from central control room or from machine consoles and control panels in equipment cabins to make paper from pulp stock, mix chemicals and dyes, and coat paper products
- Control process operations and machinery using a distributed control system and process computers
- Observe panel indicators, gauges, video monitors and other instruments to detect equipment malfunctions and ensure papermaking and coating processes are operating according to process specifications
- Analyze instrument readings and production test samples and make adjustments or direct other papermaking and finishing machine operators to make adjustments to papermaking and coating process and equipment as required
- Complete and maintain production reports.

Employment requirements

- Completion of secondary school is required.
- Completion of several weeks of formal company training and several months of on-the-job training is required.
- Several years of experience as a papermaking and finishing machine operator within the same company is usually required.
- Certificate in industrial first aid may be required.
- Competency certificate in natural gas may be required.

Additional information

- There is limited mobility among jobs within this occupational group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Papermaking and Finishing Machine Operators* (9433)
- *Pulping Control Operators* (9233)
- *Supervisors, Forest Products Processing* (9215)

9411 Machine Operators, Mineral and Metal Processing

Workers in this unit group operate single-function machines or machinery that is part of a larger production process to process mineral ore and metal products. They are employed in mineral ore and metal processing plants such as copper, lead and zinc refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries and cement processing plants.

Example titles

aluminum classifier

asbestos dryer

billet heater

brick and tile crusher operator

cement miller

extrusion press operator

foil-winding machine operator

furnace charger

ladle pourer

lead refiner

lime kiln operator

mica sheet laminator

quenching car operator

scrap metal shredder

sintering machine operator

slurry equipment operator

steel roller

uranium classifier operator

zinc cell operator

Main duties

Machine operators, mineral and metal processing, perform some or all of the following duties:

- Set up, prepare and adjust mineral ore, metal and cement processing machinery to carry out one step in the overall mineral ore or metal processing operation
- Operate single-function machinery to grind, separate, filter, mix, treat, cast, roll, refine or otherwise process mineral ores
- Observe gauges, meters, computer printouts, video monitors and products to ensure correct operation of machine and verify specified processing conditions
- Make adjustments to machinery as required
- Record production information and complete reports
- May assist with machinery maintenance or repair.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training is provided.
- Experience as a labourer in mineral and metal processing is usually required for machine operators.

Additional information

- There is little mobility among the various types of machine operators within the mineral and metal processing industry.
- With experience, machine operators may progress to central control and process operators in mineral and metal processing.

Classified elsewhere

- *Central Control and Process Operators, Mineral and Metal Processing* (9231)
- *Concrete, Clay and Stone Forming Operators* (9414)
- *Foundry Workers* (9412)
- *Glass Forming and Finishing Machine Operators and Glass Cutters* (9413)
- *Inspectors and Testers, Mineral and Metal Processing* (9415)
- *Labourers in Mineral and Metal Processing* (9611)

9412 Foundry Workers

This unit group includes workers who make foundry moulds and cores by hand or machine, cast molten metal, and operate furnaces in the foundry industry. They are employed by metal foundries and foundry departments of metal products manufacturing companies.

Example titles

bench moulder	manual moulder
casting machine operator	melter – foundry
ceramic mouldmaker	metal caster
die-casting machine operator	pit moulder
foundry worker	sand coremaker
furnace operator – foundry	sand moulder
machine coremaker	

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Manual mouldmakers make and repair sand moulds using patterns, moulding boxes, sand and hand tools following bench, floor or pit moulding methods; operate ovens to dry moulds; may pour molten metal into moulds to produce metal castings.
- Manual coremakers make cores for use inside moulds to form holes or void spaces in castings using core boxes, sand, hammer and wire or other reinforcing material; coat cores with protective materials and bake cores in oven.
- Machine mouldmakers and coremakers set up, adjust and operate various mouldmaking and coremaking machines to make sand and ceramics moulds and cores.
- Metal casters set up and operate various casting machines to cast ferrous and non-ferrous metal products; hand ladle and pour molten metal into moulds to produce castings.
- Foundry furnace operators operate furnaces used to melt metals for moulding and casting.

Employment requirements

- Completion of secondary school may be required.
- Up to two years of on-the-job training are required for manual mouldmakers; several months of on-the-job training are required for other workers in this unit group.

Additional information

- There is some mobility between workers in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Foundry labourers (in 9611 *Labourers in Mineral and Metal Processing*)
- Furnace operators who convert and refine primary metals, and operators of continuous casting processes (in 9231 *Central Control and Process Operators, Mineral and Metal Processing*)
- Supervisors of foundry workers (in 9211 *Supervisors, Mineral and Metal Processing*)

9413 Glass Forming and Finishing Machine Operators and Glass Cutters

Machine operators in this unit group operate multi-function process control machinery or single function machines to melt, form, cut or finish flat glass, glassware, bottles, and other glass products. Glass cutters cut flat glass of various thicknesses to specified sizes and shapes by hand. They are employed by glass and glass products manufacturing companies.

Example titles

bottle machine operator
float operator – glass forming
glass beveller
glass-blowing machine operator
glass cutter, hand

glass edger
glass-finishing machine operator
glass moulder
glass-pressing machine operator
mirror maker

Main duties

Glass process control operators perform some or all of the following duties:

- Operate multi-function process control machinery through control panels, computer terminals or other control systems to mix and melt raw materials; heat, anneal, temper or form float glass or glass products; and coat glass with silver or other metals and materials
- Observe gauges, computer printouts and video monitors to verify specified processing conditions and make adjustments as necessary
- Maintain shift log of production and other data
- May operate process control machinery to cut glass or assemble glass window units
- May clean and maintain process machinery
- May ensure adequate levels of oil, soap, talc or other materials used in machine production of glass.

Glass forming machine operators perform some or all of the following duties:

- Set up and adjust automatic glass feeding, flowing and forming machines
- Operate and maintain machines that press or blow molten glass in moulds to form or shape containers, such as bottles, jars and drinking glasses
- Operate electric kilns that heat glass sheets and mould to the shape and curve of metal jigs
- Spray or swab moulds with oil solutions to prevent adhesion of glass
- Weigh, measure and check production samples to assess conformance to specifications using scales and gauges and by visual verification.

Glass finishing machine operators perform some or all of the following duties:

- Set up and adjust glass and glass-product finishing machines
- Operate and maintain finishing machines to grind, drill, sand, bevel, decorate, wash or polish glass or glass products
- Visually inspect products for quality
- Record manufacturing information such as quantity, size and type of goods produced.

Glass cutters perform some or all of the following duties:

- Jig and measure and mark glass or place pattern on or under glass for cutting
- Examine and mark defective glass to obtain best cut
- Cut glass along marked outlines or around pattern using hand tools
- Smooth rough edges using belt sander or smoothing wheels
- Set up, operate and adjust computerized or robotic glass cutting equipment
- Monitor process for product quality.

Employment requirements

- Completion of secondary school may be required.
- Experience as a machine operator helper in glass manufacturing is usually required for machine operators in this unit group.
- Experience as a glass cutter helper is usually required for manual glass cutters.

Additional information

- Mobility is possible among the various types of machine operators in this unit group.

9413 Glass Forming and Finishing Machine Operators and Glass Cutters

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Glass blowers (in 5244 *Artisans and Craftspersons*)
- *Glaziers* (7292)
- Helpers and labourers in glass products manufacturing (in 9611 *Labourers in Mineral and Metal Processing*)
- Neon sign makers (in 9484 *Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing*)
- Production inspectors in glass products manufacturing (in 9415 *Inspectors and Testers, Mineral and Metal Processing*)
- Supervisors of workers in this unit group (in 9211 *Supervisors, Mineral and Metal Processing*)

9414 Concrete, Clay and Stone Forming Operators

This unit group includes workers who cast and finish concrete products, operate machines to extrude, mould, press and bake clay products, and operate machines to form, cut and finish stone products. They are employed by concrete, clay and stone products manufacturing companies.

Example titles

asbestos shingle presser

brick presser operator

clay press operator

concrete block maker

finisher – concrete, clay and stone products

granite cutter

marble cutter

moulder, clay products

precast concrete moulder

precast concrete slab maker

stone driller

stone planer

stonework moulder

Main duties

Concrete products forming and finishing workers perform some or all of the following duties:

- Construct clay models and moulds by hand and with hand tools for use in casting concrete products
- Build and repair wooden forms used to mould concrete products
- Position reinforcing rods or wire mesh in moulds and fill moulds with concrete from suspended pouring buckets
- Start vibrating tables to settle concrete, or tamp concrete using electric vibrator
- Remove castings from mould with crane or forklift, and finish surfaces of castings using screed or trowel
- Cut cured concrete pipe sections with saw or chisel, and cement sections together to form odd shaped fittings.

Concrete products machine operators perform some or all of the following duties:

- Set up, adjust and operate single-function machines to mix, drill, grind and cut concrete to specifications in the manufacture of concrete products
- Check products for quality control, repair flaws and perform ongoing machine adjustments and minor maintenance as necessary
- Move products using forklift, crane or hydraulic hoist
- Record manufacturing information such as quantity, size and type of goods produced.

Clay products forming and finishing machine operators perform some or all of the following duties:

- Set up and operate automatic machines that mix ingredients, extrude tempered clay mixture and cut extruded clay into sections to make products such as bricks, drain tiles and porcelain insulators
- Operate mechanical or hydraulic ram and hot-presses to form pottery and porcelain ware
- Prepare and mix slip and fill moulds with slip to form pottery and porcelain ware such as jugs, cups, sinks and toilet bowls
- Operate kiln to bake clay products to specified hardness.

Stone forming and finishing workers perform some or all of the following duties:

- Operate blade or wire saws to cut blocks of stone to specified dimensions
- Operate machines to grind and polish surfaces of stone blocks, slabs or other stone products to specific shape or design and to produce smooth finish
- Operate sandblasting equipment to cut inscriptions or decorative designs in stone monuments
- Finish stone products with spray paint and by mounting plaques or installing concrete bases
- Operate stone-dressing lathe to sharpen and dress grindstones that grind logs into pulp
- Operate machine to drill holes in blocks or slabs of stone according to specifications.

Employment requirements

- Some secondary school education may be required.

9414 Concrete, Clay and Stone Forming Operators

- On-the-job training is provided.
- Experience as a helper or labourer in concrete, clay or stone products manufacturing may be required.
- Mould makers in this unit group who construct and repair wooden forms may require some carpentry or woodworking experience.

Additional information

- Mobility is possible between workers within each of the concrete, clay and stone manufacturing sectors, but there is little or no mobility between these manufacturing sectors.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Concrete Finishers* (7282)
- Helpers and labourers in concrete, clay and stone products manufacturing (in 9611 *Labourers in Mineral and Metal Processing*)
- Inspectors of concrete, clay and stone products (in 9415 *Inspectors and Testers, Mineral and Metal Processing*)
- Sculptors (in 5136 *Painters, Sculptors and Other Visual Artists*)
- Stone carvers and potters (in 5244 *Artisans and Craftspersons*)
- Stone masons (in 7281 *Bricklayers*)
- Supervisors of workers in this unit group (in 9211 *Supervisors, Mineral and Metal Processing*)

9415 Inspectors and Testers, Mineral and Metal Processing

Inspectors and testers in this unit group inspect, grade, sample or test raw materials and products from mineral ore and metal processing operations. They are employed in mineral ore and metal processing plants such as copper, lead and zinc refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries, cement processing plants, clay, glass and stone processing plants and foundries.

Example titles

asbestos grader
brick and tile inspector
casting inspector
clay products grader
fibreglass tester
glass inspector
heat treating inspector

metal processing inspector
mineral sampler
molten metal sampler
sheet steel inspector
steel sheet inspector
steel tester

Main duties

Inspectors and testers perform some or all of the following duties:

- Inspect mineral ore, metal, cement, glass, clay or concrete products at various stages of processing to ensure adherence to specifications
- Grade and label raw materials or finished products according to size, thickness, composition or other classification standards
- Take samples of products during or after processing operation for routine analysis or for subsequent laboratory analysis
- Test product for strength, density, durability and conformity to specification
- Advise supervisor or process and machine operators of problems and product deficiencies
- Complete inspection and test reports.

Employment requirements

- Completion of secondary school is usually required.
- Experience as a machine or process operator in mineral and metal processing is usually required.

Classified elsewhere

- *Machine Operators, Mineral and Metal Processing* (9411)
- *Non-Destructive Testers and Inspectors* (2261)
- Quality control technologists and technicians (in 2211 *Chemical Technologists and Technicians* and 2212 *Geological and Mineral Technologists and Technicians*)
- *Supervisors, Mineral and Metal Processing* (9211)

9421 Chemical Plant Machine Operators

Chemical plant machine operators monitor and operate units and machinery to blend, mix, process and package a wide range of specialty chemicals, pharmaceuticals, cleaning and toiletry products. They are primarily employed in chemical, cleaning compound, ink and adhesive industries, but may also be employed by chemical processing departments in other industries.

Example titles

batch mixer – chemical processing

blender – chemical processing

capsule machine operator

evaporator operator – chemical processing

formulations blender operator

glue blender

granulator machine operator

mixer – chemical processing

screener – chemical processing

soap maker

Main duties

Chemical plant machine operators perform some or all of the following duties:

- Monitor meters, gauges and electronic instrumentation on one or more chemical or formulation units, such as mixers, kettles, blenders, dryers, tabletting, encapsulation, granulation and coating machines
- Measure, weigh and load chemical ingredients following formulation cards
- Start up, shut down, troubleshoot and clean equipment
- Adjust processing machines and equipment
- Monitor reaction processes and transfers of products in conformance with safety procedures
- Take samples and perform routine chemical and physical tests of products
- Record production data
- May operate equipment from a control room or from control consoles located near the production units.

- Certification in the transportation of dangerous goods (TDG), first aid, firefighting or workplace hazardous materials information system (WHMIS) may be required for some occupations in this unit group.

Additional information

- Mobility between employers producing similar products is possible for some of the more skilled operators in this unit group.
- Progression to supervisory positions or to process control occupations is possible with experience.
- Personal protective equipment may be required when working with some types of chemicals or pharmaceuticals.

Classified elsewhere

- *Petroleum, Gas and Chemical Process Operators* (9232)
- *Supervisors, Petroleum, Gas and Chemical Processing and Utilities* (9212)

Employment requirements

- Completion of secondary school is usually required.
- Completion of several months to one year of informal, on-the-job training within the company is required for most mixer and blender operators.
- Completion of more than one year of formal and informal company training may be required for some operators working in pharmaceutical, explosives and agricultural chemical or in specialty chemical plants.
- Previous experience in chemical products processing as an assistant, labourer or helper may be required for some occupations in this unit group.

9422 Plastics Processing Machine Operators

Plastics processing machine operators set up and operate plastic mixing, calendering, extruding and moulding processing machines used in the manufacture of plastic parts and plastic products. They are employed by plastic products manufacturing companies.

Example titles

bag machine operator
banbury operator – plastic manufacturing
blow moulding machine operator
calender operator – plastic manufacturing
extruder operator – plastic manufacturing

injection moulding operator
plastics press operator
printing roller moulder
solution mixer operator

Main duties

Mixing machine operators perform some or all of the following duties:

- Weigh resins, colorants and other chemicals according to formula
- Place weighed materials in mixing machine and operate machine to blend plastic and other chemicals to a specified consistency or viscosity
- Unload mixture into container or conveyor for further processing
- Maintain, and perform minor repairs on machinery as required
- Maintain inventory of material, and clean working area.

Calendering process operators perform some or all of the following duties:

- Set up and operate calender machines which transform plastic bales or slabs into continuous plastic sheets or films of specified thickness
- Troubleshoot, maintain and make minor repairs to equipment and adjust calender rollers for production line change
- Monitor quality of material produced
- Maintain inventory of material and clean working area.

Extruding process operators perform some or all of the following duties:

- Set up and operate extruding machines which extrude plastic compound through a nozzle or die
- Change dies on extruding machines according to production line change
- Troubleshoot, maintain and make minor repairs to equipment
- Monitor quality of material produced
- Maintain inventory of material, and clean working area.

Moulding process operators perform some or all of the following duties:

- Set up and operate one or more moulding machines which mould plastic products according to specifications
- Change moulds and adjust equipment for production line change
- Troubleshoot, maintain and make minor repairs to equipment
- Monitor quality of material produced and adjust machine settings as required
- Follow formulation card to mix resin batches for injection moulding process
- Maintain inventory of material, and clean working area.

Employment requirements

- For all operators in this unit group, completion of secondary school may be required.
- On-the-job training is provided.
- Several years of experience as a helper, tender or packer in the same company may be required.
- Completion of a statistical process control (SPC) course may be required.
- Completion of courses in hydraulics, pneumatics and electronics systems may be required for moulding process operators.

Additional information

- Mobility among the various operators in this unit is possible.
- Progression to supervisory positions is possible with experience.

9422 Plastics Processing Machine Operators

Classified elsewhere

- *Labourers in Rubber and Plastic Products Manufacturing* (9615)
- *Plastic Products Assemblers, Finishers and Inspectors* (9495)
- *Rubber Processing Machine Operators and Related Workers* (9423)
- *Supervisors, Plastic and Rubber Products Manufacturing* (9214)

9423 Rubber Processing Machine Operators and Related Workers

Workers in this unit group operate rubber processing machinery and assemble and inspect rubber products. They are employed by tire manufacturers and other rubber products manufacturing companies.

Example titles

assembler, rubber goods
banbury operator – rubber products manufacturing
belt builder, rubber
calender machine operator – rubber products
manufacturing
cracker operator – rubber products manufacturing
cure operator – rubber products manufacturing
extruder operator – rubber products manufacturing

hose builder, rubber
inspector, rubber products manufacturing
rubber processing machine operator
rubber products assembler
scrap rubber grinder – recycling
tire builder
tire inspector

Main duties

Rubber processing machine operators perform some or all of the following duties:

- Set up, operate and tend machinery used for mixing, calendering, extruding, moulding and curing rubber materials or rubber products
- Load or feed rubber, pigments, filler, oil and chemicals into machines
- Check and monitor processing conditions and product quality
- Adjust machines to proper setting as required
- Train or assist in training new workers.

Assemblers, rubber products perform some or all of the following duties:

- Lay out and prepare rubber materials for assembly
- Operate machines or equipment or use hand tools to cut, shape, splice, fit and cement rubber materials to form rubber parts or finished rubber products
- Operate finishing machines or equipment to trim, grind, or buff rubber products into final form
- Train or assist in training new workers.

Rubber products inspectors perform some or all of the following duties:

- Inspect finished rubber products for defects and conformance to specifications and quality standards, visually or using instruments
- Affix seals or tags to approved products and mark and reroute defective products for repair or recycle
- Fill out product inspection report
- May make minor adjustments or repairs to products.

Employment requirements

- Completion of secondary school may be required.
- Experience as a labourer in the same company may be required.
- On-the-job training is provided.

Additional information

- Mobility among the various labourers in this unit group is possible.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Labourers in Rubber and Plastic Products Manufacturing* (9615)
- *Plastic Products Assemblers, Finishers and Inspectors* (9495)
- *Plastics Processing Machine Operators* (9422)
- *Supervisors, Plastic and Rubber Products Manufacturing* (9214)

9424 Water and Waste Plant Operators

Water plant operators monitor and operate computerized control systems and related equipment in water filtration and treatment plants to regulate the treatment and distribution of water. Waste plant operators monitor and operate computerized control systems and related equipment in wastewater, sewage treatment and liquid waste plants to regulate the treatment and disposal of sewage and wastes. They are employed by municipal governments, industries and institutions.

Example titles

environmental systems operator – water treatment operator, water purification plant process operator, liquid waste sewage plant operator

wastewater treatment plant operator
water filtration plant operator
water treatment plant operator

Main duties

Water plant operators perform some or all of the following duties:

- Operate and monitor computerized control systems and related equipment in water filtration and treatment plants to regulate the treatment and distribution of water
- Read flow meters, gauges and other recording instruments to measure water output and consumption levels, bacterial content, chlorine and fluoride levels
- Monitor and inspect plant equipment and systems to detect equipment malfunctions and to ensure plant systems are operating normally
- Collect and test water samples for chemical and bacterial content
- Analyze test results and instrument readings and make adjustments to plant equipment and systems as required
- Perform security checks in plant and on grounds
- Respond to customer complaints on water quality problems
- Complete and maintain plant logs and reports
- May perform minor maintenance or assist skilled tradespersons with installation and repair of plant machinery
- May measure, mix and transport chemicals to maintain feed stocks.

Waste plant operators perform some or all of the following duties:

- Operate and monitor computerized control systems and related equipment in wastewater treatment, sewage treatment and liquid waste plants to regulate the flow of sewage through settling, aeration and digestion tanks, and to treat and dispose of sewage and wastes

- Patrol plant to check pumps, motors, filters, chlorinators and other plant equipment; monitor and read gauges, meters and other recording instruments to detect equipment malfunctions and ensure plant systems and equipment are operating within prescribed limits
- Collect waste and sewage samples, test and analyze results and make adjustments to plant equipment and systems as required
- Perform security checks in plant and on grounds
- Complete and maintain plant logs and reports
- May perform minor maintenance or assist skilled tradespersons with installation and repair of plant machinery.

Employment requirements

- Completion of secondary school is usually required.
- College, high school or industry training courses in water treatment/pollution control are required.
- Certification in water distribution or treatment (Levels I, II or III) is required.
- Certification in workplace hazardous materials information system (WHMIS), transportation of dangerous goods (TDG), and courses in safety practices may be required.
- On-the-job training is provided.
- Previous experience as a labourer or utilities maintenance worker with the same employer may be required.

Additional information

- There is limited mobility between water plant and waste plant operators.
- Progression to supervisory positions is possible with experience.

9424 Water and Waste Plant Operators

Classified elsewhere

- *Supervisors, Petroleum, Gas and Chemical Processing and Utilities* (9212)
- Water and waste plant labourers (in 9613
Labourers in Chemical Products Processing and Utilities)
- *Waterworks and Gas Maintenance Workers*
(7442)

9431 Sawmill Machine Operators

Sawmill machine operators operate, monitor and control automated lumbermill equipment to saw timber logs into rough lumber; saw, trim and plane rough lumber into dressed lumber of various sizes; and saw or split shingles and shakes. They are employed in sawmills and planing mills.

Example titles

circular saw operator
edgerman/woman
head sawyer
log cut-off operator

planer operator
resaw operator
shake splitter
trimmerman/woman

Main duties

Sawmill machine operators perform some or all of the following duties:

- Operate front-end loaders and stationary deck cranes to feed logs into the sawmill
- Examine logs and rough lumber to determine size, condition, quality and other characteristics to decide best lumber cuts to carry out, or use automated equipment to convey logs through laser scanners which determine the most productive and profitable cutting patterns
- Operate automated lumbermill equipment from control rooms or equipment consoles to saw logs into rough lumber; saw, trim and plane rough lumber into dressed lumber of various sizes; and saw or split shingles and shakes
- Start conveyor system to move logs and lumber to and from saws
- Set up and adjust saw equipment and replace blades or bands using wrenches, gauges and other hand tools
- Operate equipment to sort and stack lumber by length and thickness, move stacks to storage areas or drying kilns, and feed lumber through planers
- Monitor movement of lumber and computer screens to ensure cuts are made according to specifications, and print production reports
- Clean and lubricate sawmill equipment.

Employment requirements

- Completion of secondary school is usually required.
- College courses in wood processing technology may be required.
- Several weeks of on-the-job training are usually provided.

- Head sawyers and planer operators usually require several years of experience in other sawmill machine operating positions in the same company.
- A certificate in industrial first aid may be required.

Additional information

- There is some mobility among jobs in this occupational group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Labourers in Wood, Pulp and Paper Processing* (9614)
- *Lumber Graders and Other Wood Processing Inspectors and Graders* (9436)
- *Other Wood Processing Machine Operators* (9434)
- *Supervisors, Forest Products Processing* (9215)
- *Woodworking Machine Operators* (9513)

9432 Pulp Mill Machine Operators

Pulp mill machine operators operate and monitor various types of processing machinery and equipment to produce pulp. They are employed by pulp and paper companies.

Example titles

assistant bleacher operator – pulp and paper
assistant digester operator
cook's first helper – pulp and paper
field operator – pulp and paper
grinderman/woman – pulp and paper

refiner operator – pulp and paper
repulper operator
screenman/woman – pulp and paper
thermomechanical pulp assistant operator

Main duties

Pulp mill machine operators perform some or all of the following duties:

- Operate and monitor screening equipment, bleaching equipment, digesters, mixing tanks, washers, and other pulp processing machinery and equipment to carry out one or more cellulose processing steps
- Observe equipment and machinery panel indicators, gauges, level indicators and other equipment instruments to detect machinery and equipment malfunctions and ensure process steps are carried out according to specifications
- Communicate with pulping control operator to make process adjustments and start up or shut down machinery and equipment as required
- Collect processing samples and conduct titration tests, pH readings, specific density tests and other routine tests on pulp and solutions
- Maintain and complete production reports.

Employment requirements

- Completion of secondary school is required.
- A college diploma in forest products processing or a related subject may be required.
- Completion of several weeks of formal company training and several months of on-the-job training is required.
- Previous experience as a pulp mill labourer within the same company is usually required.
- A certificate in industrial first aid may be required.

Additional information

- There is limited mobility among jobs within this occupational group.
- Progression to pulping control operator is possible with experience.

Classified elsewhere

- *Labourers in Wood, Pulp and Paper Processing* (9614)
- *Pulping Control Operators* (9233)
- *Supervisors, Forest Products Processing* (9215)

9433 Papermaking and Finishing Machine Operators

Papermaking and finishing machine operators operate process machinery and equipment and assist papermaking and coating control operators to produce, coat and finish paper. They are employed by pulp and paper companies.

Example titles

assistant coating operator – pulp and paper
balerman/woman – pulp and paper
calender operator – pulp and paper
embossing calender operator – pulp and paper

fourth hand – pulp and paper
graderman/woman – pulp and paper
sheeter operator – pulp and paper
winderman/woman – pulp and paper

Main duties

Papermaking and finishing machine operators perform some or all of the following duties:

- Operate and monitor various papermaking and finishing process machinery and equipment to dry, calender, laminate, coat, slit, trim, wind or carry out other papermaking and finishing process steps
- Mount, position and thread paper rolls using a hoist
- Control process machinery using a distributed control system and process computers
- Observe equipment and machinery, panel indicators, gauges, level indicators and other equipment instruments to detect machinery and equipment malfunctions and ensure process steps are carried out according to specifications
- Communicate with and assist papermaking and coating control operators to make process adjustments and to start up or shut down process machines as required
- Inspect paper visually for wrinkles, holes, discolouration, streaks or other defects and take corrective action
- Maintain and complete production reports.

Employment requirements

- Completion of secondary school is required.
- Completion of several weeks of formal company training and several months of on-the-job training is required.
- Previous experience as a labourer within the same company is usually required.

Additional information

- There is limited mobility among jobs within this occupational group.
- A certificate in industrial first aid may be required.
- A competency certificate in natural gas may be required.
- Progression to papermaking and coating control operator occupations is possible with experience.

Classified elsewhere

- *Labourers in Wood, Pulp and Paper Processing* (9614)
- Machine operators engaged in fabricating and assembling paper products (in 9435 *Paper Converting Machine Operators*)
- *Papermaking and Coating Control Operators* (9234)
- *Supervisors, Forest Products Processing* (9215)

9434 Other Wood Processing Machine Operators

Machine operators in this unit group operate and tend wood processing equipment and machines to remove bark from logs, produce wood chips, preserve and treat wood, and produce waferboards, particleboards, hardboards, insulation boards, plywood, veneers and similar wood products. They are employed in sawmills, woodrooms of pulp mills, planing mills, wood treatment plants, waferboard plants and other wood processing plants.

Example titles

barker operator
chipper operator
lumber kiln operator
particleboard line operator
plywood panel assembler

timber treating tank operator
veneer dryer tender
veneer lathe operator
waferboard press operator
wood treater

Main duties

Machine operators in this unit group perform some or all of the following duties:

- Operate and tend various wood processing equipment and machines to remove bark, knots and dirt from logs; reduce logs or sawmill waste into wood chips or flakes; stack and band lumber; screen wood chips; and produce waferboards, particleboards, hardboards and insulation boards
- Operate and tend conveyors, lathes, sanding machines and other equipment to peel and slice veneer from logs and log sections, and to glue, press, trim, sand and splice veneer sheets
- Operate and tend kilns, treating tanks and other equipment to dry lumber and other wood products, and to treat chemically and impregnate wood products with preservatives
- Observe equipment, panel indicators, video monitors, and other instruments to detect malfunctions and ensure that processes are operating according to specifications
- Assemble plywood panels and repair plywood and veneer mechanically or manually
- Start up, shut down, set up, adjust and assist in maintaining processing equipment and machines as required
- Complete and maintain production reports.

Employment requirements

- Completion of secondary school is usually required.
- Several months of on-the-job training are provided.

- For lumber kiln operators, particleboard operators and waferboard operators, some combination of college or company courses and up to one year of on-the-job training may be required.
- Previous experience as a labourer in wood processing may be required.

Additional information

- There is some mobility among jobs in this unit group.
- Progression to other positions in the wood, pulp and paper industries is possible with experience.

Classified elsewhere

- *Labourers in Wood, Pulp and Paper Processing* (9614)
- *Sawmill Machine Operators* (9431)
- *Supervisors, Forest Products Processing* (9215)

9435 Paper Converting Machine Operators

Paper converting machine operators operate various machines which fabricate and assemble paper products such as paper bags, containers, boxes, envelopes and similar articles. They are employed by paper products manufacturing companies.

Example titles

box maker operator
carton forming machine operator
core maker
corrugator operator

envelope maker operator
paper bag machine operator
paper box machine operator

Main duties

Paper converting machine operators perform some or all of the following duties:

- Operate machines which cut, fold, glue or clip paper and cardboard to make boxes, corrugated cartons and other articles
- Operate machines which glue paper to cardboard and cut it into required lengths
- Operate machines which press paper to form drinking cups and other containers
- Operate machines which cut, glue and fold paper to make envelopes or paper bags
- Operate other paper converting machines to form products such as paper tubes, cards, paper towels or diapers
- Clean and lubricate machine and perform other routine machine maintenance
- Set up machines.

Employment requirements

- Completion of secondary school is required by the pulp and paper industry and other large employers.
- Several weeks of on-the-job training are provided.
- Previous experience as a labourer within the same company may be required.

Additional information

- There is some mobility between jobs in this occupational group.

Classified elsewhere

- *Papermaking and Finishing Machine Operators* (9433)
- *Printing Machine Operators* (9471)
- *Printing Press Operators* (7381)

9436 Lumber Graders and Other Wood Processing Inspectors and Graders

Lumber graders and other wood processing inspectors and graders inspect and grade lumber, shingles, veneer, waferboard and similar wood products to identify defects, ensure conformance to company specifications and classify products according to industry standards. They are employed by sawmills, planing mills, wood treatment plants, waferboard plants and other wood processing companies.

Example titles

grader tallyman/woman – wood processing
grader – wood processing
lumber grader
particleboard grader – wood processing

plywood grader
plywood inspector
veneer grader
wood measurer

Main duties

Lumber graders perform some or all of the following duties:

- Examine lumber visually for knots, holes, splits and other defects and sort for further drying, trimming or remanufacturing
- Measure lumber using callipers, gauges and tape measures to ensure specified thickness, length and width
- Classify and sort lumber according to industry standards and stamp lumber to indicate grade, wood type, moisture level and other characteristics
- Tally lumber
- Complete and maintain reports.

Other wood processing inspectors and graders perform some or all of the following duties:

- Inspect plywood panels, veneer sheets, panelboards, shingles and similar wood products visually for knots, holes, splits, straightness and other defects
- Mark defects and sort for repair or reprocessing
- Measure wood products to ensure conformance to specifications using standard measuring instruments
- Grade and label wood products according to quality standards
- Maintain and complete inspection and grading reports.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training and up to two weeks of classroom training are provided for lumber graders.

- Previous experience as a sawmill machine operator, other wood processing operator or as a labourer in wood processing is usually required for graders and inspectors in this unit group.
- Lumber graders require a lumber grader's licence issued by a provincial lumber association.

Additional information

- There is some mobility between employers processing similar wood products.

Classified elsewhere

- Forest products technologists (in 2211 *Chemical Technologists and Technicians*)
- Log scalers (in 2223 *Forestry Technologists and Technicians*)
- Production technologists in sawmills (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- Supervisors, Forest Products Processing (9215)

9441 Textile Fibre and Yarn Preparation Machine Operators

Textile fibre and yarn preparation machine operators operate machines to prepare textile fibres or to spin, wind or twist yarn or thread. They are employed by textile companies.

Example titles

card tender	twisting operator – textile manufacturing
opening and blending operator	warping operator – textile manufacturing
slasher operator – textile manufacturing	wool scourer
spinning operator – textile manufacturing	

Main duties

Textile fibre and yarn preparation machine operators perform some or all of the following duties:

- Operate and feed machines that wash, mix, blend, pick, card, lap, comb or draw fibres
- Operate and feed yarn texturizing machines
- Operate spinning or twisting frames
- Operate winding or reeling machines
- Patrol work area to check for broken yarns or product defects
- Tie broken threads
- Investigate machine stoppages
- Notify supervisor or mechanic of equipment malfunction
- May assist with maintenance and minor repairs to machinery.

Employment requirements

- Some secondary school education may be required.
- Several months of on-the-job training may be provided.

Additional information

- There is considerable mobility among occupations in this group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Supervisors, Textile Processing (9216)*

9442 Weavers, Knitters and Other Fabric-Making Occupations

Operators in this unit group operate machines to process yarn or thread into woven, non-woven and knitted products such as cloth, lace, carpets, rope, industrial fabric, hosiery and knitted garments or to quilt and embroider fabric. This unit group also includes workers who perform activities such as reproducing patterns, drawing-in and tying warps and setting up looms. They are employed by textile companies and by garment and mattress manufacturing companies.

Example titles

carpet weaver
drawer-in
drawing-in machine operator
embroidery machine operator
hosiery knitter
knitter – textiles
knitting machine operator
loom operator

mattress sewing machine operator
pinning machine operator
quilting machine operator
tufting operator
warp knitting machine tender
warp tier-in
weaver – textiles

Main duties

Operators in this unit group perform some or all of the following duties:

- Set up looms or other processing machines
- Read loom patterns and prepare loom pattern mechanisms for processing
- Operate looms to weave yarn or thread into textile fabrics or products
- Operate machines that produce twine, ropes or nets
- Operate batteries of knitting machines to produce knitted fabric, hosiery, garments or other products
- Operate carpet tufting machines, felt making needle-punch machines and other machines to produce textile products
- Operate large automatic multi-needle machines to embroider material or to sew lengths of several layers of material to make yard goods, quilts or mattress coverings
- Patrol machines and check fabrics or products for defects and to verify efficient operation
- Investigate machine stoppages
- Repair minor mechanical problems such as broken or defective needles
- Notify supervisor or repairers of mechanical malfunctions.

Employment requirements

- On-the-job training is provided for periods up to several months, depending on the complexity of the product, whether equipment set-up and maintenance is done by the operator, and the number of machines operated.
- Previous experience as a labourer in the same company may be required for some operators in this group.

Additional information

- Movement between employers may be limited by differences in machines and products.
- Progression to textile machinery mechanics and repairers or to supervisory positions is possible with experience and training.

Classified elsewhere

- Craft weavers and knitters (in 5244 *Artisans and Craftspersons*)
- *Sewing Machine Operators* (9451)
- *Supervisors, Textile Processing* (9216)
- *Textile Machinery Mechanics and Repairers* (7317)

9443 Textile Dyeing and Finishing Machine Operators

Textile dyeing and finishing machine operators operate machines to bleach, dye or finish yarn, thread, cloth or textile products. They are employed by textile manufacturing companies.

Example titles

autoclave tender – textile manufacturing
bleaching range operator
carpet drying machine tender
coater operator – textile manufacturing
dyer

dye-range operator
finishing range operator
printing operator – textile manufacturing
screen printing operator – textile manufacturing

Main duties

Textile dyeing and finishing machine operators perform some or all of the following duties:

- Operate a variety of machines to bleach, dye, coat or finish fabric, thread, yarn or other textile products
- Set up machines for proper processing
- Mix dyes or chemicals according to established formulas
- Operate machinery to print designs onto textile products
- Examine products for defects and to ensure adherence to quality standards
- Notify supervisor or mechanic in the event of equipment malfunction.

Employment requirements

- Completion of secondary school may be required.
- On-the-job training is provided for periods up to several months, depending on the complexity of the process and the number of machines operated.

Additional information

- Progression is possible within the group to operate more complex dye ranges and textile printing equipment.
- Progression to supervisory positions usually requires completion of a college program in textiles, chemistry or a related subject.

Classified elsewhere

- Master dyers and textile colour technologists (in 2211 *Chemical Technologists and Technicians*)
- *Supervisors, Textile Processing* (9216)

9444 Textile Inspectors, Graders and Samplers

Textile inspectors, graders and samplers prepare samples and inspect and grade textile products. They are employed by textile companies.

Example titles

cloth grader	quality control inspector – textiles
cloth inspector	sampler – textiles
inspector – textiles	textile grader
perch operator	yarn inspector

Main duties

Textile inspectors, graders and samplers perform some or all of the following duties:

- Examine fabric or products for conformity to quality standards
- Mark defects
- Repair minor defects
- Grade products
- Sort products by style, colour, size, length or other criteria
- Measure or weigh products
- Record information on products inspected
- May package products.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is provided.
- Experience as a weaver, knitter or other fabric-making operator may be required for inspection of more valuable and complex products.

Classified elsewhere

- *Supervisors, Textile Processing (9216)*

9451 Sewing Machine Operators

Sewing machine operators operate sewing machines to sew fabric, fur, leather or synthetic materials to produce or repair garments and other articles. They are employed in clothing, footwear, textile products, fur products and other manufacturing establishments and by furriers.

Example titles

fur sewing machine operator
leather products sewing machine operator
lining stitcher
sample maker

sample sewer
serging machine operator
sewing machine operator
shoe sewer

Main duties

Sewing machine operators perform some or all of the following duties:

- Assemble pieces of garments by matching patterns and dye lots
- Operate single, double or multi-needle serging, flat bed felling, banding and other sewing machines, to join sections of garments or other articles into finished products on a piece-work or production basis
- Operate fur sewing machines to join fur pelt strips to required size and shape and join pelts into garment sections or shells
- Operate stitching machines to sew leather parts together for leather garments, handbags, shoes and other leather articles
- Operate serging machines to sew and overcast edges of material simultaneously
- Operate tackers, pocketsetters, buttonhole makers and fusing, hemmer and other machines to perform various operations in the fabrication of garments and other articles
- Examine garments and operate sewing machines, sergers and other machines to repair garments and other articles during the manufacturing process
- Complete production reports
- May perform minor maintenance and repairs on sewing machine.

Employment requirements

- Some secondary school education is usually required.
- Experience operating a sewing machine is usually required.
- On-the-job training may be provided.

Additional information

- Sewing machine operators may progress to supervisory positions with experience.

Classified elsewhere

- *Fabric, Fur and Leather Cutters* (9452)
- Mattress sewing and embroidery machine operators (in 9442 *Weavers, Knitters and Other Fabric-Making Occupations*)
- *Shoe Repairers and Shoemakers* (7343)
- Supervisors of sewing machine operators (in 9225 *Supervisors, Fabric, Fur and Leather Products Manufacturing*)
- *Tailors, Dressmakers, Furriers and Milliners* (7342)

9452 Fabric, Fur and Leather Cutters

Fabric cutters cut fabric to make parts for garments, linens and other articles. Fur cutters cut fur pelts to make parts for garments and other fur articles. Leather cutters cut leather to make parts for shoes, garments and other leather articles. Fabric cutters are employed by clothing and textile manufacturers and other manufacturers of fabric products. Fur cutters are employed by furriers and fur products manufacturers. Leather cutters are employed by shoe and other leather products manufacturers.

Example titles

clothing cutter
fabric cutter
fur cutter
glove cutter

leather cutter
sample cutter
shoe cutter

Main duties

Fabric cutters perform some or all of the following duties:

- Place patterns on top of layers of fabric and cut fabric following patterns, using electric or manual knives, cutters or computer numerically controlled (CNC) cutting devices
- Adjust cutting technique to type of fabric and style of garment
- May cut fabric samples.

Fur cutters perform some or all of the following duties:

- Cut fur skins in diagonal strips to specified length and shape of pelt using furrier's knives and cutters
- Number pelts to indicate their location on pattern
- May sort or match skins, and may prepare fur samples.

Leather cutters perform some or all of the following duties:

- Select leather and cutting dies for leather goods and shoe parts according to specifications
- Position leather on cutting bed of machine, maximizing usage according to skin grain, skin flaws and skin stretch
- Operate clicker or punch press to stretch leather
- Operate machine to cut leather or cut single leather skins by hand to make leather products
- May cut leather samples.

- Some on-the-job training is provided for occupations in this unit group.
- Several years of on-the-job training are provided for fur cutters.

Additional information

- There is little mobility among the different kinds of cutters in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Shoe Repairers and Shoemakers* (7343)
- *Supervisors, Fabric, Fur and Leather Products Manufacturing* (9225)
- *Tailors, Dressmakers, Furriers and Milliners* (7342)

Employment requirements

- Some secondary school education is usually required.
- Experience as a fabric, fur or leather cutter is required for fabric, fur or leather sample cutters.

9453 Hide and Pelt Processing Workers

Hide and pelt processing workers trim, scrape, clean, tan, buff and dye animal hides, pelts or skins to produce leather stock and finished furs. They are employed by leather tanning, fur dressing and leather and fur dyeing establishments.

Example titles

beating machine tender
leather buffer
leather stretcher

pelt dresser
shaving machine tender
tanner

Main duties

Hide and pelt processing workers perform some or all of the following duties:

- Cut particles of flesh and fat from hides or pelts prior to processing using hand and powered cutting knives and remove loose hair from hides and pelts
- Operate machines to remove flesh or hair from hides, skins or pelts and shave hides to uniform thickness
- Shear fur or wool hides to produce pelts with hair of specified or uniform length
- Prepare solutions according to pre-established formulas in vats or revolving drums and immerse hides and skins to clean, dehair, pickle, dye, oil or tan
- Adjust rotation and mixing action of vats according to state of pelts
- Immerse pelts to clean, soften and preserve
- Operate machines to polish or roughen hides or skins to specified finish
- Tint or dye furs to enhance natural shades of fur
- May maintain and repair vats and other machinery.

Employment requirements

- On-the-job training is usually provided.

Additional information

- There is some mobility among jobs in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Supervisors of hide and pelt processing workers (in 9225 *Supervisors, Fabric, Fur and Leather Products Manufacturing*)

9454 Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing

Inspectors and testers in this unit group inspect and grade hides, pelts and leather, or garments and other manufactured fabric, fur and leather products. They are employed by leather tanning and fur dressing establishments or by garment, fur and leather products manufacturers.

Example titles

clothing inspector
cushion and cover inspector
fur grader
garment inspector
hide grader

leather goods inspector
pelt grader
seconds inspector-grader
shirt inspector

Main duties

Inspectors and testers in this unit group perform some or all of the following duties:

- Inspect and grade animal hides, pelts or leather according to size, condition and weight
- Inspect garments and similar products for defects, such as seam splits, puckers, missing buttons and colour and shape variations
- Verify fit or size by placing garment over a form or by measuring products
- Trim excess material and loose threads using scissors
- Remove lint using a brush or lint remover and remove spots using cleaning solution
- Repair minor defects using a needle and thread
- Record information on the number and nature of defects
- Grade and sort finished products and tag according to size, style and quality.

Employment requirements

- Some secondary school education may be required.
- Work experience in the manufacturing of the products under examination is usually required.

Additional information

- There is little mobility among the different inspectors and testers in this unit group.

Classified elsewhere

- *Supervisors, Fabric, Fur and Leather Products Manufacturing* (9225)
- *Textile Inspectors, Graders and Samplers* (9444)

9462 Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers

Workers in this unit group prepare meat and poultry for further processing, for packaging or for marketing. They are employed in meat and poultry slaughtering, processing and packing establishments.

Example titles

beef boner
ham cutter
industrial butcher
industrial meat cutter

meat trimmer
poultry preparer
slaughterer

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Industrial butchers slaughter livestock using stunning devices and knives; skin, clean and trim carcasses; remove viscera and other inedible parts from carcasses; split carcasses into smaller portions to facilitate handling; and may slaughter cattle, calves and sheep as prescribed by religious laws.
- Industrial meat cutters cut beef, lamb, pork or veal carcasses or sides or quarters of carcasses into primal cuts for further cutting, processing or packaging; remove bones from meat; and cut meat and poultry into specific cuts for institutional, commercial or other wholesale use.
- Poultry preparers slaughter poultry and remove inedible parts; remove feathers and singe and wash poultry to prepare for further processing or packaging.
- Trimmers remove skin, excess fat, bruises or other blemishes from carcasses or meat portions.

Employment requirements

- Completion of secondary school may be required.
- For industrial meat cutters, completion of a program in industrial meat cutting
 - or*
 - Experience as an industrial butcher or trimmer is required.
- On-the-job training is provided for industrial butchers, poultry preparers and trimmers.

Additional information

- Industrial meat cutters may progress to inspecting, testing and grading jobs.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Butchers, Meat Cutters and Fishmongers – Retail and Wholesale* (6251)
- Meat graders (in 9465 *Testers and Graders, Food and Beverage Processing*)
- Meat inspectors (in 2222 *Agricultural and Fish Products Inspectors*)
- Supervisors, meat packing (in 9213 *Supervisors, Food, Beverage and Tobacco Processing*)

9463 Fish Plant Workers

This unit group includes fish plant machine operators, who set up and operate machinery to process and package fish products, and fish plant cutters and cleaners, who cut, trim and clean fish by hand. Fish plant workers are employed in fish processing plants.

Example titles

fish cake maker
fish canning machine operator
fish cleaner and cutter
fish cutting machine operator
fish plant worker

shellfish processor
shellfish separator tender
shellfish shucker
trimmer – fish processing

Main duties

Fish plant machine operators perform some or all of the following duties:

- Set up and operate machines to clean, cut, cook, smoke, brine, dehydrate or otherwise process fish products
- Set up and operate machines to can, bag, box or otherwise package fish products
- Check products and packaging for defects and to ensure conformance to company standards and perform corrective machine adjustments as required
- Record production information such as quantity, weight, date and type of products packaged.

Fish plant cutters and cleaners perform some or all of the following duties:

- Cut, clean and trim fish prior to marketing or further processing
- Scrape away scales, cut fish, separate fillets and remove scrap parts using knife
- Check fish fillets to determine optimal number and size of fillet sections, cut sections according to specifications and place in container for weighing
- Disjoint and remove meat from lobsters or other crustaceans preparatory to canning or further processing.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Labourers in Fish Processing* (9618)
- *Supervisors, Food, Beverage and Tobacco Processing* (9213)

9464 Tobacco Processing Machine Operators

Tobacco processing machine operators operate machines to prepare and treat raw tobacco leaves or to produce and package tobacco products such as cigarettes and cigars. They are employed in leaf tobacco processing and tobacco products plants.

Example titles

cigarette machine tender
cigar maker
cleaning and classifying operator – tobacco processing
conveyor tender – tobacco processing

dryer tender – tobacco processing
module tender – tobacco processing
tobacco blender
tobacco packaging machine tender

Main duties

Tobacco processing machine operators perform some or all of the following duties:

- Operate machines that blend, flavour, condition, dry, flatten, strip or cut raw tobacco leaves
- Tend cigarette, cigar and other tobacco processing machines, and monitor product quality
- Clear blockages and adjust machines as required
- Clean machines and immediate work areas.

Employment requirements

- Completion of secondary school may be required.
- Experience as a labourer in the tobacco processing industry may be required.

Additional information

- Progression to supervisory positions in the tobacco processing industry is possible with experience.

Classified elsewhere

- *Supervisors, Food, Beverage and Tobacco Processing* (9213)
- *Tobacco testers and graders* (in *9465 Testers and Graders, Food and Beverage Processing*)

9465 Testers and Graders, Food and Beverage Processing

Testers and graders in this unit group test or grade ingredients and finished food, beverage or tobacco products to ensure conformance to company standards. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food, beverage and tobacco processing plants.

Example titles

beef grader

beer tester

cheese grader

fish grader

milk grader

poultry grader

product tester – food and beverage processing

tobacco grader

Main duties

Testers and graders in this unit group perform some or all of the following duties:

- Take samples of products at various stages of processing
- Examine ingredients or finished products by sight, touch, taste and smell or weigh materials to ensure conformance to company standards
- Conduct routine tests for product specifications such as colour, alcohol content, carbonation, moisture content, temperature, fat content and packaging
- Grade or sort raw materials or finished products
- Ensure hygiene and sanitation practices conform to policies and regulations
- Advise supervisors of ingredient or product deficiencies.

Employment requirements

- Completion of secondary school may be required.
- Experience as a machine operator or labourer in the food and beverage processing industry may be required.
- On-the-job training is usually provided.

Additional information

- There is little mobility among the various types of testers and graders in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Agricultural and Fish Products Inspectors* (2222)
- Quality control technologists and technicians (in 2211 *Chemical Technologists and Technicians*)
- *Supervisors, Food, Beverage and Tobacco Processing* (9213)

9471 Printing Machine Operators

This unit group includes workers who operate laser printers, computerized high speed colour copiers and other printing machines to print text, illustrations and designs on a wide variety of materials such as paper, plastic, glass, leather, and metal. They are employed in rapid printing services, commercial printing companies and in manufacturing and other establishments that have in-house printing facilities.

Example titles

colour copier operator	quick print machine operator
electronic sign maker operator	screen print operator
laser printer operator	silk-screening machine operator
printing and finishing machine operator	wallpaper printer
printing machine operator	

Main duties

Printing machine operators perform some or all of the following duties:

- Review work order to determine job specifications, such as ink colour and quantity required
- Set up and make adjustments to printing machine, such as filling ink or paint reservoirs and loading stock
- Input codes and key in programming data on console keyboard of computerized machines
- Operate and monitor printing machines during print run and make adjustments as required
- Clean machines and replace worn parts.

Employment requirements

- Completion of secondary school may be required.
- Completion of college or other courses in printing may be required.
- On-the-job training is provided.

Classified elsewhere

- *Printing Press Operators* (7381)
- *Supervisors, Printing and Related Occupations* (7218)
- Textile printing machine operators (in 9443 *Textile Dyeing and Finishing Machine Operators*)

9472 Camera, Platemaking and Other Prepress Occupations

This unit group includes prepress technicians who operate various computer controlled systems to perform prepress activities and workers who operate graphic arts cameras and scanners, assemble film and negatives and prepare, engrave and etch printing plates or cylinders for various types of printing presses. They are employed in firms that specialize in colour graphics or platemaking and cylinder preparation, commercial publishing and printing companies, newspapers, magazines, and in various establishments in the public and private sectors that have in-house printing departments.

Example titles

camera operator – graphic arts
cylinder preparer – printing
dot etcher
film stripper-assembler
platemaker

printing plate engraver
proofmaker
scanner operator
screenmaker
studio-image-processing system operator

Main duties

The following is a summary of main duties for some occupations in this group:

- Graphic arts camera operators set up and adjust black and white or colour separation process cameras to convert graphic art and photographs into film for assembly and exposure onto printing plates or cylinders.
- Cylinder preparers grind and polish press cylinders; expose and lay down carbon tissue; and etch or engrave cylinders using hand tools, etching machines, photogravure or laser processes to produce cylinders for gravure presses.
- Film strippers and assemblers assemble and position, either using automated equipment or by hand, pieces of film containing all parts of a printing job to produce flats or composite negatives for preparing printing plates or cylinders.
- Platemakers operate vacuum frames, plate processors and step and repeat machines to produce printing plates for various types of presses.
- Prepress technicians operate various computer-controlled studio systems to perform colour separation, retouching and editing that allow changes to be made to a colour negative for printing purposes, plan page layouts and electronically alter shape, size and positions of illustrations and text.
- Scanner operators operate computerized scanning machines or digital cameras to make colour separations and corrections from colour copy or transparencies for use in preparing film, digital files, printing plates or cylinders.

- Proofmakers operate computerized equipment to prepare film, laser or dylux proofs for quality control purposes or for customers' review.

Employment requirements

- Completion of secondary school is required.
- Completion of a college program in graphic arts technology
 - or
 - A four- to five-year apprenticeship program in printing and graphic arts
 - or
- A combination of on-the-job training and specialized college, industry or other courses is required.
- Trade certification for some occupations in this group is available, but not compulsory, in Ontario, Alberta, Nunavut and the Northwest Territories.

Classified elsewhere

- *Graphic Arts Technicians* (5223)
- *Graphic Designers and Illustrators* (5241)
- *Photographic and Film Processors* (9474)
- *Supervisors, Printing and Related Occupations* (7218)
- Typesetters and desktop publishing operators (in *1423 Desktop Publishing Operators and Related Occupations*)

9473 Binding and Finishing Machine Operators

Binding and finishing machine operators set up, operate or oversee the operation of specific machines, equipment or computerized units that bind and finish printed material. Workers who perform finishing operations in the paper, carton and packaging industries, as well as those who encode and stamp plastic cards, are included in this unit group. They are employed by binderies, commercial printing companies, newspapers, magazines, and other publishing companies, and establishments in both the public and private sectors that have in-house printing, binding and finishing departments.

Example titles

binder and finisher

binder – printing

bindery operator

bookbinder, machine

bookbinding machine operator

Cerlox binder operator

cutter operator – printing

finishing machine operator – printing

foil stamper – printing

gathering machine set-up operator – printing

gold leaf stamper

laminating machine operator

perforator operator – printing

stitcher operator – printing

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Binding and finishing machine operators set up and operate various specialized equipment and machines that cut, fold, gather and finish brochures, magazines, books, business forms and other printed material.
- Specialty finishing equipment operators set up and operate various specialized equipment and machines that die cut, emboss, imprint, laminate, heat stamp and perform other finishing operations on printed material.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a college program in graphic arts technology
 - or
 - A four-year apprenticeship program in printing
 - or
 - A combination of on-the-job training and specialized college, industry or other courses may be required.

Additional information

- There is mobility among various types of binding machine operators in this group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Feeders, loaders, offbearers and similar occupations (in 9619 *Other Labourers in Processing, Manufacturing and Utilities*)
- Hand bookbinders (in 5244 *Artisans and Craftspersons*)
- *Printing Press Operators* (7381)
- *Supervisors, Printing and Related Occupations* (7218)

9474 Photographic and Film Processors

Photographic and film processors process and finish still photographic film and motion picture film. They are employed in film processing laboratories and retail photofinishing establishments.

Example titles

darkroom technician

film developer

film printing machine operator

film processor

photofinisher

photograph developer

photographic processor

photograph inspector

Main duties

Photographic and film processors perform some or all of the following duties:

- Operate equipment to develop negatives and slides, and to print black and white and colour photographs
- Operate photographic enlarging equipment to produce prints and enlargements from negatives
- Operate equipment to develop motion picture film
- Tend automatic equipment in retail establishments to develop colour negatives, prints and slides
- Operate equipment to transfer film to video tape
- Retouch photographic negatives or original prints to correct defects
- Splice film and mount film on reels
- Measure and mix chemicals required for processing
- Inspect rolls of photographic prints for conformance to specifications; or motion picture film to detect defects in developing and printing.

Employment requirements

- Completion of secondary school is usually required.
- For employment in film processing laboratories, completion of a college or other specialized program
 - or*
 - Extensive related experience is required.
- For employment as a film printing machine operator in retail outlets, on-the-job training is provided.

Additional information

- There is mobility among occupations within laboratory processing operations.
- Progression is possible from automatic machine tenders in retail establishments to laboratory processing occupations.

Classified elsewhere

- Film strippers and assemblers and negative retouchers in the printing or graphic arts industry (in 9472 *Camera, Platemaking and Other Prepress Occupations*)
- Supervisors of photographic and film processors (in 7218 *Supervisors, Printing and Related Occupations*)

9481 Aircraft Assemblers and Aircraft Assembly Inspectors

Aircraft assemblers assemble, fit and install prefabricated parts to manufacture fixed wing or rotary wing aircraft or aircraft subassemblies. Aircraft assembly inspectors inspect aircraft assemblies for adherence to engineering specifications. They are employed by aircraft and aircraft subassembly manufacturers.

Example titles

aircraft assembler
aircraft inspector, assembly
airframe assembler
bench and structural assembler

bench fitter mechanic – aircraft assembly
rigger – aircraft assembly
wing tank mechanic – aircraft assembly

Main duties

Aircraft assemblers perform some or all of the following duties:

- Read and interpret aircraft assembly diagrams
- Assemble and fit pre-fabricated parts to form subassemblies, working at benches or directly on an aircraft structure
- Assemble, fit and install pre-fabricated parts and subassemblies such as aircraft skins, flight controls, rigging, hydraulics and other mechanical systems.

Aircraft assembly inspectors perform some or all of the following duties:

- Inspect aircraft assemblies, using measuring and testing equipment, for adherence to engineering specifications
- Inspect assemblies for alignment, symmetry, dimensions, fit and quality of workmanship
- Complete detailed inspection documentation.

Employment requirements

- Completion of secondary school is required.
- Completion of a college or other program in aviation or aeronautical technology, with emphasis in aircraft manufacturing, may be required.
- Aircraft assemblers receive several months of on-the-job and classroom training.
- Aircraft assembly inspectors require experience as an aircraft assembler.

Additional information

- Aircraft assemblers and assembly inspectors may progress to supervisory positions with experience.

Classified elsewhere

- Aircraft engine assemblers (in 7316 *Machine Fitters*)
- *Aircraft Mechanics and Aircraft Inspectors* (7315)
- Aircraft painters (in 9496 *Painters and Coaters – Industrial*)
- Avionics and aircraft electronic equipment installers (in 2244 *Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors*)
- Supervisors of aircraft assemblers or inspectors (in 9226 *Supervisors, Other Mechanical and Metal Products Manufacturing*)

9482 Motor Vehicle Assemblers, Inspectors and Testers

Motor vehicle assemblers assemble and install prefabricated motor vehicle parts and components to form subassemblies and finished motor vehicles. Motor vehicle inspectors and testers inspect and test parts, subassemblies, accessories and finished products to ensure proper performance and conformity to quality standards. They are employed in plants which manufacture automobiles, vans and light trucks.

Example titles

assembly inspector – motor vehicle manufacturing
auto assembly worker
body assembler – motor vehicle manufacturing
car assembler
chassis inspector – motor vehicle manufacturing
door fitter

motor vehicle assembler
sport utility vehicle (SUV) assembler
test driver – automobile assembly
transmission installer
van assembler

Main duties

Motor vehicle assemblers perform some or all of the following duties:

- Read electrical schematics, blueprints and other technical diagrams
- Bolt, screw, clip, weld, solder or otherwise fasten motor vehicle parts and components together using hand and power tools and equipment
- Operate and tend automated assembling equipment such as robotic and fixed automation equipment
- Connect cables, tubes and wires to complete assemblies and installations
- Position and install parts, subassemblies and accessories such as engines, transmissions, door panels or instrument panels using hand and power tools and other aids like overhead hoists
- Fit and adjust parts such as doors, hoods and trunk lids.

Motor vehicle inspectors and testers perform some or all of the following duties:

- Check motor vehicle exterior priming and colour coats, sealers and glaziers, and mark, record and report defects to be repaired
- Test motor vehicle electrical assemblies, equipment and wiring for proper performance using testing devices such as meters, analyzers and timing lights
- Inspect auto parts and fully assembled motor vehicles for defects and to ensure that previously noted defects have been corrected
- Drive and test motor vehicles on roll testing device to ensure that transmission, axle, engine and brakes function properly

Employment requirements

- Completion of secondary school is usually required.
- Skills required for occupations in this unit group are normally acquired through on-the-job training.

Additional information

- Mobility is possible to jobs in the same production department.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Assemblers of heavy trucks, trailers and buses (in 9486 *Mechanical Assemblers and Inspectors*)
- Automobile assembly painters and coaters (in 9496 *Painters and Coaters – Industrial*)
- Automotive engine, clutch and transmission assemblers (in 9486 *Mechanical Assemblers and Inspectors*)
- Mechanical repairers, automobile manufacturing (in 7321 *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers*)
- *Supervisors, Motor Vehicle Assembling* (9221)

9483 Electronics Assemblers, Fabricators, Inspectors and Testers

Electronics assemblers and fabricators assemble and fabricate electronic equipment, parts and components. Electronics inspectors and testers inspect and test electronic and electromechanical assemblies, subassemblies, parts and components to ensure conformance to prescribed standards. They are employed in electronics manufacturing plants.

Example titles

capacitor assembler	inspector, printed circuit board (PCB) assembly
circuit board assembler	precision instrument assembler – electronic equipment manufacturing
component inserting machine operator	surface mount assembler
crystal final tester	tester, electronic components
electronics assembler	through-hole assembler
electronics inspector – electronic equipment manufacturing	wafer fabrication operator
finished product inspector – electronic equipment manufacturing	wave soldering machine operator
	wiring and assembly operator

Main duties

Electronics assemblers perform some or all of the following duties:

- Solder and manually assemble various electronic components such as resistors, diodes, transistors, capacitors, integrated circuits, switches, wires and other electronic parts to designated locations on printed circuit boards
- Assemble microcircuits requiring fine hand assembly, the use of microscopes and adherence to cleanroom procedures
- Install, mount, fasten, align and adjust parts, components, wiring and harnesses to subassemblies and assemblies using hand and small power tools
- Operate automatic and semi-automatic machines to position, solder and clean prescribed components on printed circuit boards
- May replace defective components and repair and overhaul older devices.

Electronics fabricators perform some or all of the following duties:

- Operate and monitor process equipment including automatic and semi-automatic machines to fabricate electronic components, solder, clean, seal and stamp components and perform other process operations as specified
- Set up process equipment and adhere to cleanroom procedures as required.

Electronics inspectors perform some or all of the following duties:

- Inspect electronic components and assemblies to ensure correct component selection and placement, wiring and soldering quality, proper pin insertions, location and diameter of plated holes, breaks in circuitry and line spacing in printed circuit board and other specified requirements while products are being assembled or fabricated
- Check final assembly for finish, labelling and packaging methods
- Check mechanical dimensions and perform "go-no-go" electrical tests
- Identify and mark acceptable and defective assemblies and return faulty assemblies to production for repair
- Collect, record and summarize inspection results
- Investigate equipment malfunction and instruct on proper operation.

Electronics testers perform some or all of the following duties:

- Operate various test equipment and tools to perform simple electrical and continuity testing of electronic components, parts and systems
- Set up and operate automatic testing equipment to locate circuit and wiring faults, shorts and component defects
- Compare test results to specifications and set parts or products aside for repair or replace components or parts as indicated by test equipment
- May conduct life tests (burn-ins) on components, subassemblies and assemblies

9483 Electronics Assemblers, Fabricators, Inspectors and Testers

- Maintain test result reports.

Employment requirements

- Completion of secondary school is usually required for electronics assemblers, fabricators, inspectors and testers.
- On-the-job training is usually provided for occupations in this unit group.
- A two-year apprenticeship and voluntary trade certification is available for electronics assemblers in Ontario and Saskatchewan.
- Electronics testers may require post-secondary courses in basic electronic theory, testing techniques and testing equipment.
- Electronics inspectors and testers may require experience as an electronics assembler or component fabricator.

Additional information

- Progression from electronics assembler or component fabricator to electronics inspector or tester is possible with additional training and experience.

Classified elsewhere

- *Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing* (9484)
- *Electrical and Electronics Engineering Technologists and Technicians* (2241)
- *Electronic Service Technicians (Household and Business Equipment)* (2242)
- *Supervisors, Electronics Manufacturing* (9222)

9484 Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing

Assemblers in this unit group assemble prefabricated parts to produce household, commercial and industrial appliances and equipment. Inspectors in this unit group inspect and test assembled products. Workers who set up and prepare assembly lines for operation are included in this unit group. Workers in this unit group are employed by electrical appliance and electrical equipment manufacturing companies.

Example titles

assembler, electrical appliances
circuit breaker assembler
clothes dryer assembler, electric
coffee maker assembler
dishwasher assembler
hair dryer assembler

inspector, electrical appliance assembly
inspector, electrical controls assembly
lawn mower assembler, electric
production assembler, electrical equipment
refrigerator assembler, electric

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Assemble prefabricated parts on an assembly line, or at work benches using screw guns and other hand and power tools
- Assemble small and large household electrical appliances such as coffeemakers, toasters, vacuum cleaners, lawnmowers, refrigerators and dishwashers
- Assemble small transformers, small electrical motors and transmissions used in appliances or other electrical products
- Assemble circuit breakers, switches or other electrical control equipment and position and fasten components such as springs, toggles or other parts into assembly casings
- Wind coils and armatures for small electric motors and transformers
- Perform minor repairs to products rejected from production assembly line
- Set up assembly line with materials and supplies required for production, and set up and adjust production tools.

Inspectors and testers in this unit group perform some or all of the following duties:

- Check products at different stages of production for visual defects and faulty electrical and mechanical connections, or operate automatic or other testing equipment to ensure product quality
- Identify and mark acceptable and defective assemblies and return faulty assemblies to production for repair
- Collect, record and summarize inspection results.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.
- Inspectors may require experience as an assembler in the same company.
- Some types of inspectors may require completion of a college program in electronics.

Additional information

- With experience assemblers may progress to inspecting and testing positions.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Assemblers of electronic products, such as television, radios and computers (in 9483 *Electronics Assemblers, Fabricators, Inspectors and Testers*)
- Assemblers of heavy-duty electrical motors, transformers and related equipment (in 9485 *Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers*)
- *Electrical Mechanics* (7333)
- *Electric Appliance Servicers and Repairers* (7332)
- *Machine Operators and Inspectors, Electrical Apparatus Manufacturing* (9487)
- *Supervisors, Electrical Products Manufacturing* (9223)

9485 Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers

This unit group includes workers who assemble, fabricate, fit, wire and inspect heavy-duty industrial electrical equipment. They are employed by manufacturers of industrial electric motors, transformers, control equipment, railway locomotives, transit vehicles and other heavy electrical equipment.

Example titles

assembler and wirer, motors and generators
assembler, switchgear and control panel
coil winder, transformer
control panel assembler
electrical fitter
fitter-assembler, AC (alternating current) and DC (direct current) motors
inspector and tester, AC and DC motors
inspector, electrical control panel

panelboard assembler – industrial electrical equipment
power transformer assembler
switchgear fitter-wirer
transformer inspector
transformer winder
winder, AC and DC armatures
wirer, electrical switchgear panels

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Assemble and fit metal and other prefabricated parts to close tolerances according to blueprints to build heavy-duty electric motors or transformers
- Assemble stators or armatures for heavy-duty electric motors; compress steel laminations to build transformer cores; assemble windings into core using overhead cranes and make electrical connections using crimping, brazing and soldering equipment
- Assemble and fit electrical motor or transformer auxiliary equipment such as bushings, tap changes, conduit boxes, heating devices, protective equipment and cooling equipment
- Set up and adjust production machinery and equipment, such as coil winding machines, for the manufacture of heavy-duty electrical equipment
- May perform basic tests on electric motors.

Electrical fitters and wirers perform some or all of the following duties:

- Interpret engineering drawings, electrical schematics and blueprints
- Fit motor starters, contactors, capacitors, circuit breakers, voltage regulators, printed circuit boards or other electrical control devices into switchboards and panelboards to produce automated processing control equipment, electrical distribution panels, or other industrial electrical control equipment
- Wire electrical connections for switchboards and panelboards

- Assemble panelboard and switchboard cabinets and install bus bars used to carry heavy electrical current

- May operate metal fabricating equipment to fabricate or modify bus bars.

Inspectors in this unit group perform some or all of the following duties:

- Monitor production and troubleshoot production problems
- Check final assembly of electric motors, transformers or control equipment for adherence to quality control standards
- Collect, record and summarize inspection result.

Employment requirements

- Completion of secondary school is usually required.
- College courses in electricity or electro-technology may be required.
- Several years of on-the-job training are usually provided.
- Set-up persons, inspectors and leadhands in this unit group may require experience as an assembler, fitter or wirer in the same company.

Additional information

- Progression to supervisory positions is possible with experience.

9485 Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers

Classified elsewhere

- *Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing* (9484)
- Assemblers of small electrical motors, transformers, circuit breakers or similar products (in 9484 *Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing*)
- *Electrical Mechanics* (7333)
- Electrical technicians who test heavy-duty electric motors, transformers or other industrial electrical equipment (in 2241 *Electrical and Electronics Engineering Technologists and Technicians*)
- *Supervisors, Electrical Products Manufacturing* (9223)

9486 Mechanical Assemblers and Inspectors

Assemblers in this unit group assemble a wide variety of mechanical products such as trucks, buses, snowmobiles, garden tractors, automotive engines, transmissions, outboard motors, gearboxes, hydraulic pumps and sewing machines. Inspectors in this unit group check and inspect subassemblies and finished products to ensure proper quality and product specifications. They are employed by machinery and transportation equipment manufacturers and by other manufacturing companies.

Example titles

automotive engine assembler
garden machinery assembler
gearbox assembler
gearcase assembler
hydraulic hoist assembler
mechanical assembler
sewing machine assembler

snowmobile assembler
tractor assembler
transmission assembler
truck assembler
truck assembly inspector
truck trailer assembler
vending machine assembler

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Assemble, fit and install prefabricated parts to form subassemblies or finish products using hand and power tools
- Position, align and adjust parts for proper fit and assembly and connect cables, tubes and wires
- Fasten parts together using bolting and riveting equipment or other fastening and joining techniques
- Operate or tend automated assembling equipment, such as robotics and fixed automation equipment
- Operate small cranes to transport or position larger parts as required.

Inspectors in this unit group perform some or all of the following duties:

- Check subassemblies and inspect finished products for proper quality
- Check mechanical assemblies and subassemblies for alignment and proper functioning
- Test and check electrical assemblies and wiring for proper connections
- Perform minor adjustments and repairs.

Employment requirements

- Some secondary school education is required.
- Up to two years of on-the-job training are provided.
- Experience as a mechanical assembler may be required for inspectors in this unit group.

Additional information

- There is little or no mobility among the various assemblers and inspectors in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Aircraft Assemblers and Aircraft Assembly Inspectors* (9481)
- Industrial machinery, heavy equipment and aircraft engine assemblers (in *7316 Machine Fitters*)
- *Motor Vehicle Assemblers, Inspectors and Testers* (9482)
- Supervisors of mechanical assemblers and inspectors (in *9226 Supervisors, Other Mechanical and Metal Products Manufacturing*)

9487 Machine Operators and Inspectors, Electrical Apparatus Manufacturing

Machine operators in this unit group operate machinery or equipment to fabricate complete products or parts for use in the assembly of electrical appliances and equipment, and electrical apparatus, such as batteries, fuses and plugs. Inspectors in this unit group inspect and test completed parts and production items. Workers in this unit group are employed by electrical appliance and electrical equipment manufacturing companies.

Example titles

assembly machine setter – electrical equipment manufacturing
dry cell charge machine operator
epoxy coating machine operator
inspector, electrical dry battery
inspector, electrical light bulbs

machine operator – electrical equipment manufacturing
machine set-up operator – electrical appliance manufacturing
production line battery repairer – electrical equipment manufacturing

Main duties

Machine operators in this unit group perform some or all of the following duties:

- Operate machinery to assemble, test or package dry cell batteries
- Position lead acid storage batteries on assembly line and insert battery contents into casing
- Operate machinery, such as pasting and stacking machines, to fabricate plates for lead acid storage batteries
- Load machinery with glass tubes, bulbs and other parts used to produce incandescent, fluorescent and other types of light bulbs and tubes, and remove and pack finished product
- Operate or feed machinery and equipment to produce electrical wiring devices such as fuses, plugs, caps, sockets, connectors and switches
- Operate equipment to apply protective coatings to items such as freezer cabinets, small electric motors or transformer assemblies
- Perform minor repairs to items rejected from production line
- Set up and adjust production machinery and equipment for operation.

Inspectors and testers in this unit group perform some or all of the following duties:

- Check in-process and completed production items for visual or mechanical defects or operate testing equipment to maintain quality of products
- Identify and mark acceptable and defective assemblies and return faulty assemblies to production for repair
- Collect, record and summarize inspection results.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.
- Inspectors may require experience as an assembler in the same company.

Additional information

- With experience, machine operators may progress to inspecting and testing positions.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing* (9484)
- *Supervisors, Electrical Products Manufacturing* (9223)

9491 Boat Assemblers and Inspectors

Boat assemblers assemble wooden, fibreglass and metal boats, such as sailboats, motorboats, canoes and cabin cruisers. Boat inspectors check assembled boats to ensure proper product quality. They are employed by boat and marine craft manufacturing companies.

Example titles

aluminum boat assembler
boat assembler
boat inspector
canoe assembler

fibreglass boat assembler
motorboat assembler
sailboat assembler

Main duties

Boat assemblers perform some or all of the following duties:

- Cut, shape and join timber pieces or assemble pre-cut timber pieces to make a wooden boat using hand and power tools
- Assemble prefabricated parts and sections of fibreglass, metal or other material to form complete boat
- Caulk decks and hulls using caulking gun
- Install trims, rudders, seats, engine mounts and other accessories using hand tools
- May repair boats.

Boat inspectors perform some or all of the following duties:

- Inspect assembled boats for defects and conformance to quality standards
- Mark defects to be repaired
- Make minor adjustments and repairs
- Record information on products inspected.

Employment requirements

- Some secondary school education may be required.
- Completion of college or other courses in boat building may be required.
- On-the-job training is provided.
- Experience as a helper or labourer in the same company may be required for boat assemblers.
- Experience as a boat assembler may be required for boat inspectors.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Builders of customized wooden boats and wooden shipwrights (in 7271 *Carpenters*)
- Canoe builders (in 5244 *Artisans and Craftspersons*)
- Helpers and labourers in boat assembly (in 9619 *Other Labourers in Processing, Manufacturing and Utilities*)
- Marine repair technicians (in 7383 *Other Trades and Related Occupations*)
- Supervisors of boat assemblers and inspectors (in 9227 *Supervisors, Other Products Manufacturing and Assembly*)
- Workers who fabricate, assemble and fit steel and other metal components to build ships (in 7263 *Structural Metal and Platework Fabricators and Fitters*)

9492 Furniture and Fixture Assemblers and Inspectors

This unit group includes workers who assemble parts to form subassemblies or complete articles of furniture and fixtures. Inspectors in this unit group inspect furniture and fixture subassemblies and finished products to ensure product quality. They are employed by furniture manufacturing companies.

Example titles

assembly inspector – furniture manufacturing
chair assembler
desk assembler
fixture assembler
furniture assembler

furniture inspector
metal furniture assembler
table assembler
wood furniture assembler

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Prepare, sand and trim wooden furniture and fixture parts using hand and power tools
- Assemble wooden or metal furniture and fixture parts to form subassemblies and complete articles using hand and power tools
- Assemble a combination of parts made of wood, metal, plastic, cane or other materials to form subassemblies or complete furniture articles
- Reinforce assembled furniture and fixtures with dowels or other supports
- Install hardware such as hinges or clasps on furniture and fixtures.

Inspectors in this unit group perform some or all of the following duties:

- Inspect furniture and fixture subassemblies and finished products for conformance to quality standards
- Mark defective parts or products for repair
- Make minor adjustments and repairs
- Record information on products inspected.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is provided.
- Experience as a labourer in the same company may be required.

Additional information

- Mobility is possible between jobs in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Furniture Finishers and Refinishers* (9494)
- *Other Wood Products Assemblers and Inspectors* (9493)
- Supervisors of workers in this unit group (in *9224 Supervisors, Furniture and Fixtures Manufacturing*)
- *Woodworking Machine Operators* (9513)

9493 Other Wood Products Assemblers and Inspectors

Assemblers in this unit group assemble a variety of wood products and millwork, such as window sashes and doors. Inspectors in this unit group inspect wood products to ensure product quality. They are employed by establishments engaged in manufacturing a variety of wood and millwork products.

Example titles

bench assembler, wood products	sash and door inspector
crate builder, wood	wooden box assembler
manufactured housing production worker	wooden door maker
millwork assembler	wood products assembler
pallet maker, wood	wood products assembling inspector
prefabricated housing assembler	

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Read production orders and diagrams
- Trim and sand joints, moulding, or other wooden parts to be assembled using hand and power tools
- Assemble wood products such as window sashes, doors, boxes, pallets, ladders and barrels using glue, staples, screws, bolts or other fasteners
- Assemble door panels, trusses, modular components and other parts on assembly line to make prefabricated housing using jigs, overhead cranes and hand and power tools
- Reinforce assembled products with dowelling or other supports, and install hardware such as knobs and hinges
- May assist with maintenance of machinery.

Inspectors in this unit group perform some or all of the following duties:

- Inspect wood products for conformance to quality standards
- Mark defective parts or products for repair
- Make minor adjustments and repairs
- Record information on products inspected.

Employment requirements

- Some secondary school education may be required.
- Experience as a labourer in the same company may be required.
- Inspectors may require related assembly experience.
- On-the-job training is provided.

Classified elsewhere

- *Cabinetmakers* (7272)
- *Carpenters* (7271)
- *Furniture and Fixture Assemblers and Inspectors* (9492)
- Labourers in wood products manufacturing (in 9619 *Other Labourers in Processing, Manufacturing and Utilities*)
- *Supervisors, Other Products Manufacturing and Assembly* (9227)
- *Woodworking Machine Operators* (9513)

9494 Furniture Finishers and Refinishers

Furniture finishers finish new wood or metal furniture to specified colour and finish. They are employed in furniture manufacturing plants, retail furniture stores or refinishing and repair shops. Furniture refinishers refinish repaired, used or old furniture. They are employed in furniture refinishing and repair shops or they may be self-employed.

Example titles

finishing machine operator
furniture finisher
furniture polisher
furniture refinisher
furniture stainer

furniture stripper
touch-up person – furniture finishing
trimmer – furniture finishing
wash-off operator – furniture finishing
wood finisher

Main duties

Furniture finishers perform some or all of the following duties:

- Set up and operate finishing machines or finish furniture by hand
- Stain or finish wood to specified colour with stains, paints or other materials using brush or spray gun
- Apply toners, highlights, glazes or shaders to obtain desired finish
- Apply lacquer or other sealers
- Decorate wood surfaces or mark surfaces to create antique or other effects using hand and power tools
- Clean and polish furniture
- Sand metal furniture to prepare for finish and spray with paint or other materials.

Furniture refinishers perform some or all of the following duties:

- Strip old finish from wood surfaces using steel wool, sandpaper and solvents
- Smooth gouges with wood filler and sand wood
- Match colours to obtain original finish and apply appropriate finish to stripped wood
- Polish and wax refinished surfaces
- Sand or grind metal surfaces to prepare for coating, and paint metal surfaces using electrostatic method, spray gun or other painting equipment
- Make minor repairs to furniture
- May perform duties of furniture finisher.

• College, high school or industry courses in furniture finishing or refinishing may be required.

- On-the-job training is provided.

Classified elsewhere

- *Painters and Decorators* (7294)
- *Upholsterers* (7341)

Employment requirements

- Some secondary school education is required.

9495 Plastic Products Assemblers, Finishers and Inspectors

This unit group includes workers who assemble, finish and inspect plastic parts and finished products. They are employed by plastic products manufacturing companies and plastic parts divisions of aircraft or other manufacturing companies.

Example titles

fibreglass laminator

plastic bottle trimmer

plastic parts assembler

plastic products fabricator

plastic products inspector and tester

plastics assembler

plastics inspector

plastics trimmer

plastic tank assembler

skylight assembler

Main duties

Plastic products assemblers and finishers perform some or all of the following duties:

- Operate machines or equipment, or use hand tools to cut, shape, splice and fit plastic materials to form parts and assemblies
- Assemble composite materials on patterns to form parts and assemblies using bonding agents
- Operate spray-gun unit to apply resin mixtures to metal or wooden mould to form plastic products
- Load and operate autoclave oven to cure and bond plastic parts and subassemblies
- Operate finishing equipment to trim, grind or buff plastic products into final form.

Plastic products inspectors perform some or all of the following duties:

- Inspect manufactured plastic products for defects and conformance to specifications and quality standards, visually or using instruments
- Affix seals or tags to approved plastic products and mark and reroute defective products for repair or recycle
- Prepare reports on products inspected
- Make minor adjustments and repairs to products.

Employment requirements

- Some secondary school education is usually required.
- Experience as a labourer in the same company may be required for assemblers, finishers and inspectors.
- On-the-job training is provided.

Additional information

- Mobility among the various workers in this unit group is possible.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Labourers in Rubber and Plastic Products Manufacturing* (9615)
- *Plastics Processing Machine Operators* (9422)
- *Rubber Processing Machine Operators and Related Workers* (9423)
- *Supervisors, Plastic and Rubber Products Manufacturing* (9214)

9496 Painters and Coaters – Industrial

Painters and coaters in this unit group tend and operate machines or use brushes and spray equipment to apply paint, enamel, lacquer or other non-metallic protective and decorative coatings to surfaces of various products. They are employed by manufacturing companies, specialized coating shops and refinishing establishments.

Example titles

assembly painter	manufacturing painter
automobile painter – motor vehicle manufacturing	paint machine operator
aviation painter	paint systems operator
bathtub refinisher	production painter
coating machine operator – industrial painting and coating	robotic spray paint attendant
dip tank attendant	rustproofer, motor vehicle
enameller	spray painter
industrial products painter	spray paint operator

Main duties

Painters and coaters in this unit group perform some or all of the following duties:

- Select appropriate paint or mix paints using automated paint mixing equipment according to a pre-determined formula
- Tend or operate equipment to clean, wash, strip, sand, remove corrosion, fill dents or otherwise prepare items for application of paint, lacquer or other protective or decorative coatings
- Tend or operate automated spray paint, dip or flow coating equipment or other mechanized painting or product coating application equipment
- Operate hand-held spray guns to spray paint or coat stationary items or items on moving conveyor system with protective or decorative coatings
- Paint small items and apply touch-ups using paint brushes
- Clean and maintain painting and coating, ventilation, compressed air and personal protective equipment
- May prepare and apply stencils, computer-generated decals or other decorative items on finished products.

Employment requirements

- Some secondary school education is usually required.
- Several months of on-the-job training are usually provided.

- Some industrial painters, such as aviation painters, require specialized training or college courses.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Autobody repair painters or repainters (in 7322 *Motor Vehicle Body Repairers*)
- Construction painters (in 7294 *Painters and Decorators*)
- *Furniture Finishers and Refinishers* (9494)
- *Plating, Metal Spraying and Related Operators* (9497) and *Supervisors, Assembly and Fabrication* (922)
- Supervisors of manufacturing painters and coaters (in 9214 *Supervisors, Plastic and Rubber Products Manufacturing*)

9497 Plating, Metal Spraying and Related Operators

This unit group includes workers who operate machines or equipment to deposit metallized substances on metal or other articles to provide decorative, protective or restorative coatings. They are employed by metal products manufacturing companies and by customized metal plating and coating shops.

Example titles

anodizer	metal dipper
electroplater operator	metal electroplater
galvanizer	metal spray operator
metal coater operator	sherardizer

Main duties

Operators in this unit group perform some or all of the following duties:

- Prepare and mix metallizing solutions according to formulas or specifications
- Operate and control electroplating equipment to coat metal and other objects
- Operate hot-dip metal plating equipment to galvanize metal and other objects
- Tend automatic metal coating machine which conveys objects through series of cleaning, rinsing and plating solutions
- Operate spray equipment to build up worn or damaged parts or to bond protective or decorative coatings on metal objects
- Check proper thickness of plating using micrometers, callipers or other devices
- May clean and prepare metal parts for coating
- May tend ovens which cure metal coating.

Employment requirements

- Some secondary school education is usually required.
- Experience in operating production machinery or equipment may be required.
- Three to six months of on-the-job training are usually required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Production painters (in 9496 *Painters and Coaters – Industrial*)
- Supervisors of operators in this unit group (in 9226 *Supervisors, Other Mechanical and Metal Products Manufacturing*)

9498 Other Assemblers and Inspectors

This unit group includes assemblers and inspectors, not elsewhere classified, who assemble and inspect a variety of products, such as jewellery, silverware, clocks and watches, musical instruments, sporting goods, toys, and other miscellaneous products. They are employed by a wide variety of manufacturing companies.

Example titles

antenna assembler
bicycle assembler
camera assembly inspector
eyeglass frame assembler
golf club assembler
jewellery inspector

lampshade assembler
piano assembly inspector
toy inspector
Venetian blind assembler
watch assembler

Main duties

Assemblers in this unit group perform some or all of the following duties:

- Cut, shape and fit materials to form parts and components
- Screw, clip, glue, bond, weld or otherwise assemble parts and components to form final products
- Sand, trim, grind or clean products into final form using hand tools.

Inspectors in this unit group perform some or all of the following duties:

- Check manufactured items for defects and for conformance to specifications, visually or using sample models and instruments
- Affix seals or tags to approved items and return defective products for repair or recycle
- Complete reports on product inspection.

Employment requirements

- Some secondary school education is usually required.
- Experience as a manufacturing labourer in the same company may be required.
- On-the-job training is provided.

Additional information

- There is little or no mobility among the various assemblers and inspectors in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Other Products Machine Operators* (9517)
- *Supervisors, Other Products Manufacturing and Assembly* (9227)

9511 Machining Tool Operators

Machining tool operators set up and operate or tend metal-cutting machines designed for repetitive machining work. They are employed by metal products and other manufacturing companies and in machine shops. This unit group also includes workers who etch or chemically mill metal pieces.

Example titles

aircraft parts etcher	milling machine set-up operator
boring mill operator – metal machining	production gear cutter
CNC machining tool operator	production grinder operator – metal machining
lathe machining operator	radial drill operator – metal machining
machining tool operator	

Main duties

Machining tool operators perform some or all of the following duties:

- Study job orders and interpret blueprints to determine machining operations to be performed
- Set up and operate machine tools to perform repetitive machining operations, such as turning, milling, drilling, boring, planing, honing, broaching, grinding or other machining operations
- Verify dimensions of parts machined using micrometers, callipers and other precision measuring instruments
- Prepare etching solution and immerse metal parts or workpiece in etching solution to remove unwanted portions
- Perform routine maintenance on equipment and machinery
- May enter codes specifying speed, feed and cut of the toolpath for computer numerical controlled (CNC) machine tools.

Employment requirements

- Some secondary school education is required.
- College or other courses in machining may be required.
- Several months of on-the-job training are provided.
- Senior positions in this unit group, such as set-up operator, require experience as a machine operator.

Additional information

- Experienced machining tool operators may become machinists or tool and die makers through apprenticeship training.

Classified elsewhere

- CAD/CAM and CNC programmers (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- *Machinists and Machining and Tooling Inspectors* (7231)
- *Supervisors, Machinists and Related Occupations* (7211)
- *Tool and Die Makers* (7232)

9512 Forging Machine Operators

Forging machine operators operate forging machines to form and shape metal into various shapes and sizes and impart desired strength, hardness or other characteristics. They are employed primarily in the fabricated metal products, machinery, and transportation equipment industries.

Example titles

bending machine operator
cold drawn operator
cold press operator
forging press operator

hot press operator
manipulator operator
trip hammer operator
upsetter operator

Main duties

Forging machine operators perform some or all of the following duties:

- Operate gas or oil fired furnaces to heat metal to proper temperature prior to forging
- Place metal pieces in furnace using hand tongs or overhead cranes and remove from furnace when colour of metal indicates proper forging temperature, or load and unload furnace with automatic conveyor
- Position heated or cold metal pieces, on die of press or other forging machinery
- Operate presses or other forging machines to perform hot or cold forging by flattening, straightening, twisting, forming, drawing, upsetting, splitting, cutting, punching, piercing, bending, coining, or other operations to shape or form metal
- Position and adjust dies on anvil of forging machinery using overhead cranes or other hoisting devices and hand tools.

Employment requirements

- Completion of secondary school may be required.
- On-the-job training is provided.

Additional information

- Progression to blacksmith, die setting, or supervisory positions is possible with experience.

Classified elsewhere

- *Blacksmiths and Die Setters (7266)*
- Supervisors of forging machine operators (in *9226 Supervisors, Other Mechanical and Metal Products Manufacturing*)

9513 Woodworking Machine Operators

Woodworking machine operators set up, program and operate one or more woodworking machines to fabricate or repair wooden parts for furniture, fixtures or other wood products. They are employed in furniture, fixture and other wood products manufacturing establishments.

Example titles

boring machine operator – woodworking
CNC band saw operator – woodworking
drill operator – woodworking
drum sander – woodworking
edge bander operator – woodworking
glue machine operator – woodworking

lathe operator – woodworking
planer operator – woodworking
rough mill operator – woodworking
shaper – woodworking
woodworking machine operator

Main duties

Woodworking machine operators perform some or all of the following duties:

- Set up, program and operate one or more computer numerically controlled (CNC) or manual woodworking machines such as saws, moulders, lathes, routers, planers, edgers, pressing machines, shapers, drills and sanders to fabricate or repair wooden parts for furniture, fixtures and other wood products
- Operate gluing machines to glue pieces of wood together or press and affix wood veneer to wood surfaces
- Operate preset special-purpose woodworking machines to fabricate wood products such as coat hangers, mop handles, clothes pins and other products
- Read and interpret specifications or follow verbal instructions
- May clean and lubricate equipment, and replace parts as necessary.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is usually provided.
- Experience as a labourer in the same company may be required.

Additional information

- Mobility is common among jobs in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Cabinetmakers (7272)*
- *Carpenters (7271)*
- Supervisors of woodworking machine operators (in 9224 *Supervisors, Furniture and Fixtures Manufacturing*)

9514 Metalworking Machine Operators

Light metalworking machine operators operate metalworking machines which shape and form sheet or other light metal into parts or products. They are employed by sheet metal products manufacturing companies, sheet metal shops and other light metal products manufacturing establishments. Heavy metalworking machine operators operate metalworking machines which shape and form steel or other heavy metal into parts or products. They are employed by structural steel fabrication, boiler and platework manufacturing companies, heavy machinery manufacturing companies and in the shipbuilding industry.

Example titles

disk flange operator
metalworking machine operator
power press operator
press brake operator
punch press operator

roll operator – metal fabrication
saw operator – metal fabrication
shear operator
vertical press operator

Main duties

Metalworking machine operators perform some or all of the following duties:

- Read specifications or follow verbal instructions
- Lay out, set up and operate one or more light or heavy metalworking machines such as shears, power presses, saws, plate rolls, drills, brakes, slitters, punch presses, computer numerically controlled (CNC) equipment, and other hand tools to cut, bend, roll, ream, punch and drill, weld or otherwise shape and form metal stock into parts or products
- Operate machines or equipment which weld, solder, bolt, screw or rivet metal parts together
- Check products for correct shapes, dimensions and other specifications
- Troubleshoot and perform corrective action or minor repairs
- May select and transport material to work area manually or using crane or hoist
- May document work completed
- May build staging or erect scaffolding as required for heavy metalworking jobs
- May clean or lubricate equipment and replace parts as required.

Employment requirements

- Some secondary school education is required.
- On-the-job training is usually provided.
- Previous experience as a labourer or helper in the same company may be required.

Additional information

- There is little or no mobility between operators of light and heavy metalworking machines.
- Progression to structural metal fabricator or supervisory positions is possible with experience.

Classified elsewhere

- *Sheet Metal Workers* (7261)
- *Structural Metal and Platework Fabricators and Fitters* (7263)
- Supervisors of metalworking machine operators (in 9226 *Supervisors, Other Mechanical and Metal Products Manufacturing*)

9516 Other Metal Products Machine Operators

This unit group includes metal products machine operators, not elsewhere classified, who operate one or more automatic or multi-purpose machines to produce a variety of metal parts and products, such as wire mesh, nails, bolts and chains. They are employed by a wide variety of metal products manufacturing companies.

Example titles

bolt machine operator

nail making machine tender

bullet maker

spring machine operator

can-forming machine operator

wire screen maker

chain-making machine operator

wire weaver

metal cable maker operator

Main duties

Machine operators in this unit group perform some or all of the following duties:

- Operate or tend automatic or multi-purpose machines including wire looms to produce metal parts and metal products such as wire screening, fencing, tinware, metal baskets, racks, hooks, metal tubing and similar articles
- Fit and assemble components using hand and power tools
- Clean, polish, file or otherwise finish products
- Check products for quality and other specifications
- May clean and lubricate machinery.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.
- Experience as a labourer in the same company may be required.

Additional information

- There is some mobility among machine operators in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Forging Machine Operators* (9512)
- *Machining Tool Operators* (9511)
- *Metalworking Machine Operators* (9514)
- Supervisors of machine operators in this unit group (in 9226 *Supervisors, Other Mechanical and Metal Products Manufacturing*)

9517 Other Products Machine Operators

This unit group includes all machine operators, not elsewhere classified, who operate machines to cut, press, stamp, mould, treat, finish or otherwise fabricate components or products, such as jewellery, buttons, pencils, crayons, non-prescription lenses, brushes, notions and other miscellaneous products. They are employed by a wide variety of manufacturing companies.

Example titles

brush making machine operator
button machine operator
crayon making machine tender
jewellery annealer
prism maker operator

skate press operator
sports ball moulder
stuffing machine tender
tennis ball maker operator

Main duties

Machine operators in this unit group perform some or all of the following duties:

- Operate machines which cut, press, stamp, mould, treat, finish or otherwise fabricate components or products
- Load supplies into hoppers of dispensing units or manually align, feed or otherwise place materials into machines
- Monitor machines for proper operation watching for jammed materials, defective units or other irregularities
- Clean work stations, removing scraps, dust, shavings or other by-products from machinery and surrounding areas
- May make routine changes of dies, nozzles or other machinery attachments as required.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.
- Experience as a labourer in the same company may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Other Assemblers and Inspectors (9498)*
- Supervisors of machine operators in this unit group (in 9227 Supervisors, *Other Products Manufacturing and Assembly*)

9611 Labourers in Mineral and Metal Processing

Labourers in this unit group perform material handling, clean-up, packaging and other elemental activities related to mineral ore and metal processing. They are employed in mineral ore and metal processing plants such as copper, lead and zinc refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries, cement processing plants, clay, glass and stone processing plants and foundries.

Example titles

asbestos worker
billet pusher
brick and tile kiln cleaner
casting helper
foundry labourer
furnace helper

glass packer
kiln labourer
metal pourer helper
rolling mill worker
salt screening labourer
tailings labourer

Main duties

Labourers in mineral and metal processing perform some or all of the following duties:

- Transport raw materials, finished products, scrap and recyclable materials throughout plant manually or using forklift or other powered equipment
- Feed conveyors, crushers and other equipment; open valves and start pumps; skim dross from furnaces; sort, stack, bundle and stamp materials; and perform other activities to assist process and machine operators in mineral ore and metal processing
- Clean work areas and equipment
- May assist with minor repairs and maintenance.

Employment requirements

- Completion of secondary school may be required for some positions in this group.

Additional information

- Progression to machine and process operator positions is possible with experience.

Classified elsewhere

- *Labourers in Metal Fabrication (9612)*
- *Machine Operators and Related Workers in Metal and Mineral Products Processing (941)*

9612 Labourers in Metal Fabrication

Labourers in this unit group remove excess metal and unwanted materials from metal parts, castings and other metal products and perform other labouring activities. They are employed in structural steel, boiler and platework fabrication plants, heavy machinery manufacturing plants, sheet metal fabrication shops, shipbuilding and other metal products manufacturing companies.

Example titles

chipper-grinder	metalworking machine helper
forge helper	plaster helper
grinder-deburrer	shipfitter helper
labourer – metal fabrication	shotblaster
metal cleaner	wheelabrator operator

Main duties

Labourers in this unit group perform some or all of the following duties:

- Read and interpret work orders
- Operate metal cleaning equipment such as wheelabrators, deburrers and shotblasters to remove excess welds, rust, scale and other material from surfaces of metal parts, castings and other metal products
- Polish metal products to mirror finish
- Immerse metal products in cleaning solutions
- Assist structural steel and platework fitters, sheet metal workers, metalworking machine operators or other metal workers
- Transport raw materials and finished metal products manually or using hoists or other devices
- Sort metal sheets and parts, scrap metal and other materials
- Clean work areas and equipment
- Load and unload vehicles using hand truck or dolly
- May cut, grind or chip excess metal from metal products using hand tools.

Employment requirements

- Some secondary school education may be required.

Additional information

- There is some mobility between occupations in this unit group.
- Progression to metalworking machine operator positions is possible with experience.

Classified elsewhere

- *Labourers in Mineral and Metal Processing (9611)*
- *Metal machine operators (in 951 Machining, Metalworking, Woodworking and Related Machine Operators)*

9613 Labourers in Chemical Products Processing and Utilities

Labourers in this unit group carry out a variety of material handling, cleaning and routine general labouring activities. They are employed by petroleum and natural gas processing, pipeline and petrochemical, chemical and pharmaceutical companies, and by electrical, water and waste treatment utilities.

Example titles

cleaner, filter – chemical processing

cleaner, still – chemical processing

coating machine feeder – chemical processing

helper – chemical processing

labourer – gas utility

loader – chemical processing

retort unloader

water intake tender

waterworks labourer

Main duties

Labourers in this unit group perform some or all of the following duties:

- Feed and unload production machinery and equipment
- Clean chemical processing machines and equipment and production areas
- Move, sort and pile materials and products manually and using powered equipment
- Assist other workers to operate, repair and maintain process equipment, gas distribution, water filtration and waste water plant equipment
- Perform general duties such as basic construction, painting and other manual tasks.

Employment requirements

- Completion of secondary school may be required.

Additional information

- Considerable mobility is possible among jobs in this occupational group.
- Progression to operator positions in the chemical or utility industry is possible with experience and appropriate entry qualifications.

Classified elsewhere

- *Chemical Plant Machine Operators* (9421)
- *Petroleum, Gas and Chemical Process Operators* (9232)
- *Power Systems and Power Station Operators* (7352)
- *Supervisors, Petroleum, Gas and Chemical Processing and Utilities* (9212)
- *Water and Waste Plant Operators* (9424)
- *Waterworks and Gas Maintenance Workers* (7442)

9614 Labourers in Wood, Pulp and Paper Processing

Labourers in this unit group carry out a variety of general labouring and routine wood processing activities and assist pulp mill and papermaking machine operators. They are employed by pulp and paper, and paper converting companies, sawmills, planing mills, wood treatment plants, waferboard plants and other wood processing companies.

Example titles

beater operator helper – pulp and paper
chip bin attendant – wood processing
conveyor cleaner – pulp and paper
green wood chainman/woman – wood processing
grinder feeder – pulp and paper
labourer – pulp and paper

labourer – wood processing
lumber straightener – wood processing
plywood dryer feeder
sheeter helper – pulp and paper
utility man/woman – pulp and paper

Main duties

Labourers in this unit group perform some or all of the following duties:

- Feed logs onto conveyor and into hopper of grinding machine and align logs manually, using crowbar, picaroon or other tools and equipment
- Load wood chips, pulpwood, sulphur and other processing materials onto conveyors or processing tanks, remove recyclable paper and pulp from pulp and papermaking machines and transport recyclable paper and pulp to plant processing machines and equipment using forklift or other powered equipment
- Sort, pile and transport lumber, veneer sheets, panelboards and similar wood products during various stages of wood processing, manually or with powered equipment
- Remove scrap lumber and wood chips for reprocessing using forklift or other powered equipment
- Feed conveyors, saws, drying machines and other equipment to process lumber, shingles, veneer, plywood and similar wood products
- Clean wood processing machines and equipment and work areas using shovels, hoses and other tools
- Assist other wood processing workers to operate, maintain and repair various machines and equipment and carry out other wood processing activities.

Employment requirements

- Completion of secondary school is required by the pulp and paper industry and by other large employers.

Additional information

- There is considerable mobility among jobs within individual establishments.
- Progression to machine or plant operating positions is possible with experience.

Classified elsewhere

- *Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing* (943)
- *Supervisors, Forest Products Processing* (9215)

9615 Labourers in Rubber and Plastic Products Manufacturing

Labourers in this unit group assist machine operators, transport materials and perform similar tasks. They are employed by rubber and plastic products manufacturing companies.

Example titles

belt builder helper	moulded products stripper – rubber and plastic products manufacturing
labourer – plastic products manufacturing	roll changer – rubber manufacturing
labourer – rubber products manufacturing	spreader operator helper – plastic products manufacturing
machine offbearer – rubber products manufacturing	
manufacturing	
mould cleaner – rubber products manufacturing	

Main duties

Labourers in this unit group perform some or all of the following duties:

- Assist machine operators or assemblers in performing their duties
- Assist in setting up and dismantling machinery and equipment
- Clean and lubricate machinery and equipment
- Transport materials and tools to and from work areas using hand trucks or other conveyance
- Prepare raw materials for mixing process
- Monitor machines to watch for jammed materials or defective products.

Employment requirements

- Some secondary school education is usually required.

Additional information

- Progression to machine operator or assembler positions in rubber and plastic products manufacturing is possible with experience.

Classified elsewhere

- *Plastic Products Assemblers, Finishers and Inspectors* (9495)
- *Plastics Processing Machine Operators* (9422)
- *Rubber Processing Machine Operators and Related Workers* (9423)
- *Supervisors, Plastic and Rubber Products Manufacturing* (9214)

9616 Labourers in Textile Processing

Labourers in textile processing perform a variety of manual duties to assist in processing fibres into yarn or thread, or to assist in weaving, knitting, bleaching, dyeing or finishing textile fabrics or other textile products. They are employed by textile companies.

Example titles

doffer
dyeing and finishing machine loader
helper – textiles

textile machine cleaner
waste machine feeder
yarn handler

Main duties

Labourers in textile processing perform some or all of the following duties:

- Load and off-load machines
- Clean textile machines and work areas
- Push carts, trucks, or cans of fibres from one work area to another
- Assist machine operators and other textile workers as required.

Employment requirements

- Some secondary school education may be required.

Additional information

- Progression to machine operator positions is possible with experience.

Classified elsewhere

- *Machine Operators and Related Workers in Textile Processing (944)*
- *Supervisors, Textile Processing (9216)*

9617 Labourers in Food, Beverage and Tobacco Processing

Labourers in this unit group perform material handling, clean-up, packaging and other elemental activities related to food, beverage and tobacco processing. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries and other food, beverage and tobacco processing plants.

Example titles

bottle washer
brewery labourer
cigarette packer
dairy helper

food processing labourer
meat packager
potato chip sorter
production helper

Main duties

Labourers in food, beverage and tobacco processing perform some or all of the following duties:

- Transport raw materials, finished products and packaging materials throughout plant and warehouse manually, or with powered equipment
- Measure and dump ingredients into hoppers of mixing and grinding machines or mobile tank trucks
- Feed flattened boxes into forming machines to construct containers
- Remove filled containers from conveyors and manually pack goods into bags, boxes or other containers
- Clean work areas and equipment
- Feed and unload tobacco processing machines
- Check products and packaging for basic quality defects
- Assist process control and machine operators in performing their duties.

Employment requirements

- Some secondary school education may be required.

Additional information

- There is some mobility among occupations in this group.
- Labourers in food, beverage and tobacco processing may progress to machine or process operating positions with experience.

Classified elsewhere

- *Labourers in Fish Processing* (9618)
- *Process Control and Machine Operators, Food and Beverage Processing* (9461)
- *Tobacco Processing Machine Operators* (9464)

9618 Labourers in Fish Processing

Labourers in this unit group perform clean-up, packaging, material handling and other elemental activities related to fish processing. They are employed in fish processing and packaging plants.

Example titles

cannery labourer
fish briner
fish plant labourer
fish salter

fish weigher
shellfish labourer
shellfish packer

Main duties

Labourers in fish processing perform some or all of the following duties:

- Unload fish and shellfish from fishing vessels and transport them by hand or forklift truck to work area in fish processing plant
- Immerse fresh fish fillets in brine solution to condition them for wrapping or freezing
- Weigh fish or shellfish, record weight and pack fish in ice
- Sort fish according to species, weight and destination
- Clean work areas and equipment
- Transport supplies and packaging materials throughout plant and storage area manually or with powered equipment
- Measure and dump ingredients into hoppers of mixing and grinding machines.

Employment requirements

- Some secondary school education may be required.

Additional information

- Progression to other occupations in the fish processing industry is possible with experience.

Classified elsewhere

- *Fish Plant Workers (9463)*
- Foremen/women of workers in fish processing (in 9213 *Supervisors, Food, Beverage and Tobacco Processing*)

9619 Other Labourers in Processing, Manufacturing and Utilities

This unit group includes labourers, not elsewhere classified, who perform material handling, clean-up, packaging and other elemental activities in processing, manufacturing and utilities. They are employed by companies that manufacture products such as clothing, footwear, furniture and electrical and electronic products and by printing and packaging companies.

Example titles

bindery helper	garment folder
box packer	labourer, shoe manufacturing
carton marker	lens blocker
chair sander	packager, machine
clothing plant labourer	seed packager
electrical products labourer	sorter, recyclable materials
film cutter – film processing	upholsterer helper
furniture packer	

Main duties

Labourers in this unit group perform some or all of the following duties:

- Transport raw materials, finished products and equipment throughout plant manually or using powered equipment
- Check and weigh materials and products
- Sort, pack, crate and package materials and products
- Assist machine operators, assemblers and other workers
- Clean work areas and equipment
- Perform other labouring and elemental activities.

Employment requirements

- Some secondary school education may be required.

Additional information

- There is some mobility among occupations in this unit group.
- Progression to machine operating positions is possible with experience.

Classified elsewhere

- Supervisors of labourers in this unit group (in 9227 *Supervisors, Other Products Manufacturing and Assembly*)

APPENDIX

Classification Structure of the National Occupational Classification for Statistics

The National Occupational Classification for Statistics (NOC-S)

Statistics Canada has implemented a two-part numbering system in its publication to link the statistical aggregation to the NOC codes. The first part of the numbering system indicates the placement of the minor and unit groups within the NOC-S aggregation structure, and the second part of the numbering system, following a decimal point, represents the NOC code. This two-part numbering system allows users to relate data produced by Statistics Canada to the minor and unit groups of the NOC. The NOC and the NOC-S represent one classification framework for measuring economic activity in the Canadian labour market and for providing information about the work of Canadians.

The structure of the NOC-S follows. Further information about the NOC-S can be obtained from:

Standards Division
Statistics Canada
Jean Talon Building
170 Tunney's Pasture Driveway
Ottawa, Ontario
K1A 0T6

Phone: 613-951-2923
Fax: 613-951-8578
Internet: www.statcan.ca/english/concepts/occupation.htm

A MANAGEMENT OCCUPATIONS**A0 SENIOR MANAGEMENT OCCUPATIONS****A01.001 Legislators and Senior Management**

A011.0011 Legislators

A012.0012 Senior Government Managers and Officials

A013.0013 Senior Managers - Financial, Communications and Other Business Services

A014.0014 Senior Managers - Health, Education, Social and Community Services and Membership Organizations

A015.0015 Senior Managers - Trade, Broadcasting and Other Services, n.e.c.

A016.0016 Senior Managers - Goods Production, Utilities, Transportation and Construction

A1 SPECIALIST MANAGERS**A11.011 Administrative Services Managers**

A111.0111 Financial Managers

A112.0112 Human Resources Managers

A113.0113 Purchasing Managers

A114.0114 Other Administrative Services Managers

A12.021 Managers in Engineering, Architecture, Science and Information Systems

A121.0211 Engineering Managers

A122.0213 Computer and Information Systems Managers

A123.0212 Architecture and Science Managers

A13.061 Sales, Marketing and Advertising Managers

A131.0611 Sales, Marketing and Advertising Managers

A14.072 Facility Operation and Maintenance Managers

A141.0721 Facility Operation and Maintenance Managers

A2 MANAGERS IN RETAIL TRADE, FOOD AND ACCOMMODATION SERVICES**A21.062 Managers in Retail Trade**

A211.0621 Retail Trade Managers

A22.063 Managers in Food Service and Accommodation

A221.0631 Restaurant and Food Service Managers

A222.0632 Accommodation Service Managers

A3 OTHER MANAGERS N.E.C.**A30.012 Managers in Financial and Business Services**

A301.0121 Insurance, Real Estate and Financial Brokerage Managers

A302.0122 Banking, Credit and Other Investment Managers

A303.0123 Other Business Services Managers

A31.013 Managers in Communication (Except Broadcasting)

A311.0131 Telecommunication Carriers Managers

A312.0132 Postal and Courier Services Managers

A32.031	Managers in Health, Education, Social and Community Services	A353.0643	Commissioned Officers, Armed Forces
A321.0311	Managers in Health Care	A36.065	Managers in Other Services
A322.0312	Administrators - Post-Secondary Education and Vocational Training	A361.0651	Other Services Managers
A323.0313	School Principals and Administrators of Elementary and Secondary Education	A37.071	Managers in Construction and Transportation
A324.0314	Managers in Social, Community and Correctional Services	A371.0711	Construction Managers
A33.041	Managers in Public Administration	A372.0712	Residential Home Builders and Renovators
A331.0411	Government Managers - Health and Social Policy Development and Program Administration	A373.0713	Transportation Managers
A332.0412	Government Managers - Economic Analysis, Policy Development and Program Administration	A38.081	Managers in Primary Production (Except Agriculture)
A333.0413	Government Managers - Education Policy Development and Program Administration	A381.0811	Primary Production Managers (Except Agriculture)
A334.0414	Other Managers in Public Administration	A39.091	Managers in Manufacturing and Utilities
A34.051	Managers in Art, Culture, Recreation and Sport	A391.0911	Manufacturing Managers
A341.0511	Library, Archive, Museum and Art Gallery Managers	A392.0912	Utilities Managers
A342.0512	Managers - Publishing, Motion Pictures, Broadcasting and Performing Arts	B	BUSINESS, FINANCE AND ADMINISTRATIVE OCCUPATIONS
A343.0513	Recreation, Sports and Fitness Program and Service Directors	B0	PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE
A35.064	Managers in Protective Service	B01.111	Auditors, Accountants and Investment Professionals
A351.0641	Commissioned Police Officers	B011.1111	Financial Auditors and Accountants
A352.0642	Fire Chiefs and Senior Firefighting Officers	B012.1112	Financial and Investment Analysts
		B013.1113	Securities Agents, Investment Dealers and Brokers
		B014.1114	Other Financial Officers
		B02.112	Human Resources and Business Service Professionals

B021.1121	Specialists in Human Resources	B315.1225	Purchasing Agents and Officers	
B022.1122	Professional Occupations in Business Services to Management	B316.1226	Conference and Event Planners	
B1 FINANCE AND INSURANCE ADMINISTRATION OCCUPATIONS			B317.1227 Court Officers and Justices of the Peace	
B11.123 Finance and Insurance Administrative Occupations			B318.1228 Immigration, Employment Insurance and Revenue Officers	
B111.1231	Bookkeepers	B4 CLERICAL SUPERVISORS		
B112.1232	Loan Officers	B41.121 Clerical Supervisors		
B113.1233	Insurance Adjusters and Claims Examiners	B411.1211	Supervisors, General Office and Administrative Support Clerks	
B114.1234	Insurance Underwriters	B412.1212	Supervisors, Finance and Insurance Clerks	
B115.1235	Assessors, Valuators and Appraisers	B413.1213	Supervisors, Library, Correspondence and Related Information Clerks	
B116.1236	Customs, Ship and Other Brokers	B414.1214	Supervisors, Mail and Message Distribution Occupations	
B2 SECRETARIES			B415.1215 Supervisors, Recording, Distributing and Scheduling Occupations	
B21.124 Secretaries, Recorders and Transcriptionists			B5 CLERICAL OCCUPATIONS	
B211.1241	Secretaries (Except Legal and Medical)	B51.141 Clerical Occupations, General Office Skills		
B212.1242	Legal Secretaries	B511.1411	General Office Clerks	
B213.1243	Medical Secretaries	B513.1413	Records Management and Filing Clerks	
B214.1244	Court Recorders and Medical Transcriptionists	B514.1414	Receptionists and Switchboard Operators	
B3 ADMINISTRATIVE AND REGULATORY OCCUPATIONS			B52.142 Office Equipment Operators	
B31.122 Administrative and Regulatory Occupations			B522.1422	Data Entry Clerks
B311.1221	Administrative Officers	B523.1423	Desktop Publishing Operators and Related Occupations	
B312.1222	Executive Assistants	B524.1424	Telephone Operators	
B313.1223	Personnel and Recruitment Officers	B53.143 Finance and Insurance Clerks		
B314.1224	Property Administrators			

B531.1431	Accounting and Related Clerks	B574.1474	Purchasing and Inventory Clerks
B532.1432	Payroll Clerks	B575.1475	Dispatchers and Radio Operators
B533.1433	Customer Service Representatives - Financial Services	B576.1476	Transportation Route and Crew Schedulers
B534.1434	Banking, Insurance and Other Financial Clerks		
B535.1435	Collectors		
B54.144	Administrative Support Clerks	C0	PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES
B541.1441	Administrative Clerks	C01.211	Physical Science Professionals
B542.1442	Personnel Clerks	C011.2111	Physicists and Astronomers
B543.1443	Court Clerks	C012.2112	Chemists
B55.145	Library, Correspondence and Related Information Clerks	C013.2113	Geologists, Geochemists and Geophysicists
B551.1451	Library Clerks	C014.2114	Meteorologists
B552.1452	Correspondence, Publication and Related Clerks	C015.2115	Other Professional Occupations in Physical Sciences
B553.1453	Customer Service, Information and Related Clerks	C02.212	Life Science Professionals
B554.1454	Survey Interviewers and Statistical Clerks	C021.2121	Biologists and Related Scientists
B56.146	Mail and Message Distribution Occupations	C022.2122	Forestry Professionals
B561.1461	Mail, Postal and Related Clerks	C023.2123	Agricultural Representatives, Consultants and Specialists
B562.1462	Letter Carriers	C03.213	Civil, Mechanical, Electrical and Chemical Engineers
B563.1463	Couriers, Messengers and Door-to-Door Distributors	C031.2131	Civil Engineers
B57.147	Recording, Scheduling and Distributing Occupations	C032.2132	Mechanical Engineers
B571.1471	Shippers and Receivers	C033.2133	Electrical and Electronics Engineers
B572.1472	Storekeepers and Parts Clerks	C034.2134	Chemical Engineers
B573.1473	Production Clerks	C04.214	Other Engineers
		C041.2141	Industrial and Manufacturing Engineers

C042.2142	Metallurgical and Materials Engineers	C11.221	Technical Occupations in Physical Sciences
C043.2143	Mining Engineers	C111.2211	Chemical Technologists and Technicians
C044.2144	Geological Engineers	C112.2212	Geological and Mineral Technologists and Technicians
C045.2145	Petroleum Engineers	C113.2213	Meteorological Technicians
C046.2146	Aerospace Engineers	C12.222	Technical Occupations in Life Sciences
C047.2147	Computer Engineers (Except Software Engineers and Designers)	C121.2221	Biological Technologists and Technicians
C048.2148	Other Professional Engineers, n.e.c.	C122.2222	Agricultural and Fish Products Inspectors
C05.215	Architects, Urban Planners and Land Surveyors	C123.2223	Forestry Technologists and Technicians
C051.2151	Architects	C124.2224	Conservation and Fishery Officers
C052.2152	Landscape Architects	C125.2225	Landscape and Horticulture Technicians and Specialists
C053.2153	Urban and Land Use Planners	C13.223	Technical Occupations in Civil, Mechanical and Industrial Engineering
C054.2154	Land Surveyors	C131.2231	Civil Engineering Technologists and Technicians
C06.216	Mathematicians, Statisticians and Actuaries	C132.2232	Mechanical Engineering Technologists and Technicians
C061.2161	Mathematicians, Statisticians and Actuaries	C133.2233	Industrial Engineering and Manufacturing Technologists and Technicians
C07.217	Computer and Information Systems Professionals	C134.2234	Construction Estimators
C071.2171	Information Systems Analysts and Consultants	C14.224	Technical Occupations in Electronics and Electrical Engineering
C072.2172	Database Analysts and Data Administrators	C141.2241	Electrical and Electronics Engineering Technologists and Technicians
C073.2173	Software Engineers and Designers		
C074.2174	Computer Programmers and Interactive Media Developers		
C075.2175	Web Designers and Developers		
C1	TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES		

C142.2242	Electronic Service Technicians (Household and Business Equipment)	C173.2273	Deck Officers, Water Transport
C143.2243	Industrial Instrument Technicians and Mechanics	C174.2274	Engineer Officers, Water Transport
C144.2244	Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors	C175.2275	Railway Traffic Controllers and Marine Traffic Regulators
C15.225	Technical Occupations in Architecture, Drafting, Surveying and Mapping	C18.228	Technical Occupations in Computer and Information Systems
C151.2251	Architectural Technologists and Technicians	C181.2281	Computer Network Technicians
C152.2252	Industrial Designers	C182.2282	User Support Technicians
C153.2253	Drafting Technologists and Technicians	C183.2283	Systems Testing Technicians
C154.2254	Land Survey Technologists and Technicians	D HEALTH OCCUPATIONS	
C155.2255	Mapping and Related Technologists and Technicians	D0 PROFESSIONAL OCCUPATIONS IN HEALTH	
C16.226	Other Technical Inspectors and Regulatory Officers	D01.311	Physicians, Dentists and Veterinarians
C161.2261	Non-destructive Testers and Inspectors	D011.3111	Specialist Physicians
C162.2262	Engineering Inspectors and Regulatory Officers	D012.3112	General Practitioners and Family Physicians
C163.2263	Inspectors in Public and Environmental Health and Occupational Health and Safety	D013.3113	Dentists
C164.2264	Construction Inspectors	D014.3114	Veterinarians
C17.227	Transportation Officers and Controllers	D02.312	Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals
C171.2271	Air Pilots, Flight Engineers and Flying Instructors	D021.3121	Optometrists
C172.2272	Air Traffic Control and Related Occupations	D022.3122	Chiropractors
		D023.3123	Other Professional Occupations in Health Diagnosing and Treating
		D03.313	Pharmacists, Dietitians and Nutritionists
		D031.3131	Pharmacists
		D032.3132	Dietitians and Nutritionists

D04.314	Therapy and Assessment Professionals	D22.322	Technical Occupations in Dental Health Care
D041.3141	Audiologists and Speech-Language Pathologists	D221.3221	Denturists
D042.3142	Physiotherapists	D222.3222	Dental Hygienists and Dental Therapists
D043.3143	Occupational Therapists	D223.3223	Dental Technologists, Technicians and Laboratory Bench Workers
D044.3144	Other Professional Occupations in Therapy and Assessment	D23.323	Other Technical Occupations in Health Care (Except Dental)
D1	NURSE SUPERVISORS AND REGISTERED NURSES	D231.3231	Opticians
D11.315	Nurse Supervisors and Registered Nurses	D232.3232	Midwives and Practitioners of Natural Healing
D111.3151	Head Nurses and Supervisors	D233.3233	Licensed Practical Nurses
D112.3152	Registered Nurses	D234.3234	Ambulance Attendants and Other Paramedical Occupations
D2	TECHNICAL AND RELATED OCCUPATIONS IN HEALTH	D235.3235	Other Technical Occupations in Therapy and Assessment
D21.321	Medical Technologists and Technicians (Except Dental Health)	D3	ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES
D211.3211	Medical Laboratory Technologists and Pathologists' Assistants	D31.341	Assisting Occupations in Support of Health Services
D212.3212	Medical Laboratory Technicians	D311.3411	Dental Assistants
D213.3213	Veterinary and Animal Health Technologists and Technicians	D312.3413	Nurse Aides, Orderlies and Patient Service Associates
D214.3214	Respiratory Therapists, Clinical Perfusionists and Cardiopulmonary Technologists	D313.3414	Other Assisting Occupations in Support of Health Services
D215.3215	Medical Radiation Technologists	E	OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION
D216.3216	Medical Sonographers	E0	JUDGES, LAWYERS, PSYCHOLOGISTS, SOCIAL WORKERS, MINISTERS OF RELIGION, AND POLICY AND PROGRAM OFFICERS
D217.3217	Cardiology Technologists		
D218.3218	Electroencephalographic and Other Diagnostic Technologists, n.e.c.		
D219.3219	Other Medical Technologists and Technicians (Except Dental Health)		

E01.411	Judges, Lawyers and Quebec Notaries	E039.4165	Health Policy Researchers, Consultants and Program Officers
E011.4111	Judges	E1 TEACHERS AND PROFESSORS	
E012.4112	Lawyers and Quebec Notaries	E11.412 University Professors and Assistants	
E02.415	Psychologists, Social Workers, Counsellors, Clergy and Probation Officers	E111.4121	University Professors
E021.4151	Psychologists	E112.4122	Post-Secondary Teaching and Research Assistants
E022.4152	Social Workers	E12.413 College and Other Vocational Instructors	
E023.4153	Family, Marriage and Other Related Counsellors	E121.4131	College and Other Vocational Instructors
E024.4154	Ministers of Religion	E13.414 Secondary and Elementary School Teachers and Educational Counsellors	
E025.4155	Probation and Parole Officers and Related Occupations	E131.4141	Secondary School Teachers
E03.416	Policy and Program Officers, Researchers and Consultants	E132.4142	Elementary School and Kindergarten Teachers
E031.4161	Natural and Applied Science Policy Researchers, Consultants and Program Officers	E133.4143	Educational Counsellors
E032.4162	Economists and Economic Policy Researchers and Analysts	E2 PARALEGALS, SOCIAL SERVICES WORKERS AND OCCUPATIONS IN EDUCATION AND RELIGION, N.E.C.	
E033.4163	Business Development Officers and Marketing Researchers and Consultants	E21.421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.	
E034.4164	Social Policy Researchers, Consultants and Program Officers	E211.4211	Paralegal and Related Occupations
E035.4166	Education Policy Researchers, Consultants and Program Officers	E212.4212	Community and Social Service Workers
E036.4167	Recreation, Sports and Fitness Program Supervisors and Consultants	E213.4213	Employment Counsellors
E037.4168	Program Officers Unique to Government	E214.4215	Instructors and Teachers of Persons with Disabilities
E038.4169	Other Professional Occupations in Social Science, n.e.c.	E215.4216	Other Instructors
		E216.4217	Other Religious Occupations

E217.4214	Early Childhood Educators and Assistants
F OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	
F0 PROFESSIONAL OCCUPATIONS IN ART AND CULTURE	
F01.511	Librarians, Archivists, Conservators and Curators
F011.5111	Librarians
F012.5112	Conservators and Curators
F013.5113	Archivists
F02.512	Writing, Translating and Public Relations Professionals
F021.5121	Authors and Writers
F022.5122	Editors
F023.5123	Journalists
F024.5124	Professional Occupations in Public Relations and Communications
F025.5125	Translators, Terminologists and Interpreters
F03.513	Creative and Performing Artists
F031.5131	Producers, Directors, Choreographers and Related Occupations
F032.5132	Conductors, Composers and Arrangers
F033.5133	Musicians and Singers
F034.5134	Dancers
F035.5135	Actors and Comedians
F036.5136	Painters, Sculptors and Other Visual Artists

F1 TECHNICAL OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	
F11.521	Technical Occupations in Libraries, Archives, Museums and Art Galleries
F111.5211	Library and Archive Technicians and Assistants
F112.5212	Technical Occupations Related to Museums and Art Galleries
F12.522	Photographers, Graphic Arts Technicians and Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
F121.5221	Photographers
F122.5222	Film and Video Camera Operators
F123.5223	Graphic Arts Technicians
F124.5224	Broadcast Technicians
F125.5225	Audio and Video Recording Technicians
F126.5226	Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
F127.5227	Support Occupations in Motion Pictures, Broadcasting and the Performing Arts
F13.523	Announcers and Other Performers
F131.5231	Announcers and Other Broadcasters
F132.5232	Other Performers
F14.524	Creative Designers and Craftspersons
F141.5241	Graphic Designers and Illustrators
F142.5242	Interior Designers

F143.5243	Theatre, Fashion, Exhibit and Other Creative Designers	G12.622	Technical Sales Specialists, Wholesale Trade
F144.5244	Artisans and Craftspersons	G121.6221	Technical Sales Specialists - Wholesale Trade
F145.5245	Patternmakers - Textile, Leather and Fur Products	G13.623	Insurance and Real Estate Sales Occupations and Buyers
F15.525	Athletes, Coaches, Referees and Related Occupations	G131.6231	Insurance Agents and Brokers
F151.5251	Athletes	G132.6232	Real Estate Agents and Salespersons
F152.5252	Coaches	G133.6233	Retail and Wholesale Buyers
F153.5253	Sports Officials and Referees	G134.6234	Grain Elevator Operators
F154.5254	Program Leaders and Instructors in Recreation, Sport and Fitness	G2 RETAIL SALESPERSONS AND SALES CLERKS	
G SALES AND SERVICE OCCUPATIONS		G21.642	Retail Salespersons and Sales Clerks
G0 SALES AND SERVICE SUPERVISORS		G211.6421	Retail Salespersons and Sales Clerks
G01.621	Sales and Service Supervisors	G3 CASHIERS	
G011.6211	Retail Trade Supervisors	G31.661	Cashiers
G012.6212	Food Service Supervisors	G311.6611	Cashiers
G013.6213	Executive Housekeepers	G4 CHEFS AND COOKS	
G014.6214	Dry Cleaning and Laundry Supervisors	G41.624	Chefs and Cooks
G015.6215	Cleaning Supervisors	G411.6241	Chefs
G016.6216	Other Service Supervisors	G412.6242	Cooks
G1 WHOLESALE, TECHNICAL, INSURANCE, REAL ESTATE SALES SPECIALISTS, AND RETAIL, WHOLESALE AND GRAIN BUYERS		G5 OCCUPATIONS IN FOOD AND BEVERAGE SERVICE	
G11.641	Sales Representatives, Wholesale Trade	G51.645	Occupations in Food and Beverage Service
G111.6411	Sales Representatives - Wholesale Trade (Non-Technical)	G511.6451	Maîtres d'hôtel and Hosts / Hostesses
		G512.6452	Bartenders
		G513.6453	Food and Beverage Servers

G6 OCCUPATIONS IN PROTECTIVE SERVICES		
G61.626 Police Officers and Firefighters		
G611.6261 Police Officers (Except Commissioned)	G721.6441	Tour and Travel Guides
G612.6262 Firefighters	G722.6442	Outdoor Sport and Recreational Guides
G62.646 Other Occupations in Protective Service	G723.6443	Casino Occupations
G621.6461 Sheriffs and Bailiffs	G73.667 Other Occupations in Travel, Accommodation, Amusement and Recreation	
G622.6462 Correctional Service Officers	G731.6671	Operators and Attendants in Amusement, Recreation and Sport
G623.6463 By-Law Enforcement and Other Regulatory Officers, n.e.c.	G732.6672	Other Attendants in Accommodation and Travel
G624.6464 Other Ranks, Armed Forces		
G625.6465 Other Protective Service Occupations		
G63.665 Security Guards and Related Occupations	G8 CHILDCARE AND HOME SUPPORT WORKERS	
G631.6651 Security Guards and Related Occupations	G81.647 Childcare and Home Support Workers	
G7 OCCUPATIONS IN TRAVEL AND ACCOMMODATION INCLUDING ATTENDANTS IN RECREATION AND SPORT	G811.6471	Visiting Homemakers, Housekeepers and Related Occupations
G71.643 Occupations in Travel and Accommodation	G812.6472	Elementary and Secondary School Teacher Assistants
G711.6431 Travel Counsellors	G814.6474	Babysitters, Nannies and Parents' Helpers
G712.6432 Pursers and Flight Attendants		
G713.6433 Airline Sales and Service Agents	G9 SALES AND SERVICE OCCUPATIONS N.E.C.	
G714.6434 Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)	G91.627 Technical Occupations in Personal Service	
G715.6435 Hotel Front Desk Clerks	G911.6271	Hairstylists and Barbers
G72.644 Tour and Recreational Guides and Casino Occupations	G912.6272	Funeral Directors and Embalmers
	G92.648 Other Occupations in Personal Service	
	G921.6481	Image, Social and Other Personal Consultants
	G922.6482	Estheticians, Electrologists and Related Occupations

G923.6483	Pet Groomers and Animal Care Workers	H0 CONTRACTORS AND SUPERVISORS IN TRADES AND TRANSPORTATION
G924.6484	Other Personal Service Occupations	H01.721 Contractors and Supervisors, Trades and Related Workers
G93.666 Cleaners		
G931.6661	Light Duty Cleaners	H011.7211 Supervisors, Machinists and Related Occupations
G932.6662	Specialized Cleaners	H012.7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
G933.6663	Janitors, Caretakers and Building Superintendents	H013.7213 Contractors and Supervisors, Pipefitting Trades
G94.625 Butchers and Bakers		H014.7214 Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades
G941.6251	Butchers, Meat Cutters and Fishmongers - Retail and Wholesale	H015.7215 Contractors and Supervisors, Carpentry Trades
G942.6252	Bakers	H016.7216 Contractors and Supervisors, Mechanic Trades
G96.664 Food Counter Attendants, Kitchen Helpers and Related Occupations		H017.7217 Contractors and Supervisors, Heavy Construction Equipment Crews
G961.6641	Food Counter Attendants, Kitchen Helpers and Related Occupations	H018.7218 Supervisors, Printing and Related Occupations
G97.662 Other Sales and Related Occupations		H019.7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers
G971.6621	Service Station Attendants	H02.722 Supervisors, Railway and Motor Transportation Occupations
G972.6622	Grocery Clerks and Store Shelf Stockers	H021.7221 Supervisors, Railway Transport Operations
G973.6623	Other Elemental Sales Occupations	H022.7222 Supervisors, Motor Transport and Other Ground Transit Operators
G98.668 Other Elemental Service Occupations		H1 CONSTRUCTION TRADES
G981.6681	Dry Cleaning and Laundry Occupations	H11.725 Plumbers, Pipefitters and Gas Fitters
G982.6682	Ironing, Pressing and Finishing Occupations	H111.7251 Plumbers
G983.6683	Other Elemental Service Occupations	
H TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS		

H112.7252	Steamfitters, Pipefitters and Sprinkler System Installers	H215.7245	Telecommunications Line and Cable Workers		
H113.7253	Gas Fitters	H216.7246	Telecommunications Installation and Repair Workers		
H12.727 Carpenters and Cabinetmakers		H217.7247			
H121.7271 Carpenters			Cable Television Service and Maintenance Technicians		
H122.7272 Cabinetmakers		H22.735 Stationary Engineers and Power Station and System Operators			
H13.728 Masonry and Plastering Trades		H221.7351 Stationary Engineers and Auxiliary Equipment Operators			
H131.7281 Bricklayers		H222.7352 Power Systems and Power Station Operators			
H132.7282 Concrete Finishers		H3 MACHINISTS, METAL FORMING, SHAPING AND ERECTING OCCUPATIONS			
H133.7283 Tilesetters		H31.723 Machinists and Related Occupations			
H134.7284 Plasterers, Drywall Installers and Finishers and Lathers		H311.7231 Machinists and Machining and Tooling Inspectors			
H14.729 Other Construction Trades		H312.7232 Tool and Die Makers			
H141.7291 Roofers and Shinglers		H32.726 Metal Forming, Shaping and Erecting Trades			
H142.7292 Glaziers		H321.7261 Sheet Metal Workers			
H143.7293 Insulators		H322.7262 Boilermakers			
H144.7294 Painters and Decorators		H323.7263 Structural Metal and Platework Fabricators and Fitters			
H145.7295 Floor Covering Installers		H324.7264 Ironworkers			
H2 STATIONARY ENGINEERS, POWER STATION OPERATORS AND ELECTRICAL TRADES AND TELECOMMUNICATIONS OCCUPATIONS					
H21.724 Electrical Trades and Telecommunication Occupations					
H211.7241 Electricians (Except Industrial and Power System)		H325.7266 Blacksmiths and Die Setters			
H212.7242 Industrial Electricians		H326.7265 Welders and Related Machine Operators			
H213.7243 Power System Electricians		H4 MECHANICS			
H214.7244 Electrical Power Line and Cable Workers		H41.731 Machinery and Transportation Equipment Mechanics (Except Motor Vehicle)			

H411.7311	Construction Millwrights and Industrial Mechanics (Except Textile)	H512.7342	Tailors, Dressmakers, Furriers and Milliners
H412.7312	Heavy-Duty Equipment Mechanics	H513.7343	Shoe Repairers and Shoemakers
H413.7313	Refrigeration and Air Conditioning Mechanics	H514.7344	Jewellers, Watch Repairers and Related Occupations
H414.7314	Railway Carmen / women	H52.738	Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.
H415.7315	Aircraft Mechanics and Aircraft Inspectors	H521.7381	Printing Press Operators
H416.7316	Machine Fitters	H522.7382	Commercial Divers
H417.7317	Textile Machinery Mechanics and Repairers	H523.7383	Other Trades and Related Occupations
H418.7318	Elevator Constructors and Mechanics	H53.744	Other Installers, Repairers and Servicers
H42.732	Automotive Service Technicians	H531.7441	Residential and Commercial Installers and Servicers
H421.7321	Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers	H532.7442	Waterworks and Gas Maintenance Workers
H422.7322	Motor Vehicle Body Repairers	H533.7443	Automotive Mechanical Installers and Servicers
H43.733	Other Mechanics	H534.7444	Pest Controllers and Fumigators
H431.7331	Oil and Solid Fuel Heating Mechanics	H535.7445	Other Repairers and Servicers
H432.7332	Electric Appliance Servicers and Repairers	H6	HEAVY EQUIPMENT AND CRANE OPERATORS INCLUDING DRILLERS
H433.7333	Electrical Mechanics	H61.742	Heavy Equipment Operators
H434.7334	Motorcycle and Other Related Mechanics	H611.7421	Heavy Equipment Operators (Except Crane)
H435.7335	Other Small Engine and Equipment Mechanics	H612.7422	Public Works Maintenance Equipment Operators
H5 OTHER TRADES N.E.C.		H62.737	Crane Operators, Drillers and Blasters
H51.734	Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations	H621.7371	Crane Operators
H511.7341	Upholsterers		

H622.7372	Drillers and Blasters - Surface Mining, Quarrying and Construction	H81.745	Longshore Workers and Material Handlers
H623.7373	Water Well Drillers	H811.7451	Longshore Workers
H7	TRANSPORTATION EQUIPMENT OPERATORS AND RELATED WORKERS, EXCLUDING LABOURERS	H812.7452	Material Handlers
H71.741	Motor Vehicle and Transit Drivers	H82.761	Trades Helpers and Labourers
H711.7411	Truck Drivers	H821.7611	Construction Trades Helpers and Labourers
H712.7412	Bus Drivers, Subway Operators and Other Transit Operators	H822.7612	Other Trades Helpers and Labourers
H713.7413	Taxi and Limousine Drivers and Chauffeurs	H83.762	Public Works and Other Labourers, n.e.c.
H714.7414	Delivery and Courier Service Drivers	H831.7621	Public Works and Maintenance Labourers
H72.736	Train Crew Operating Occupations	H832.7622	Railway and Motor Transport Labourers
H721.7361	Railway and Yard Locomotive Engineers	I	OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY
H722.7362	Railway Conductors and Brakemen / women	I0	OCCUPATIONS UNIQUE TO AGRICULTURE EXCLUDING LABOURERS
H73.743	Other Transport Equipment Operators and Related Workers	I01.825	Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture
H731.7431	Railway Yard Workers	I011.8251	Farmers and Farm Managers
H732.7432	Railway Track Maintenance Workers	I012.8252	Agricultural and Related Service Contractors and Managers
H733.7433	Deck Crew, Water Transport	I013.8253	Farm Supervisors and Specialized Livestock Workers
H734.7434	Engine Room Crew, Water Transport	I014.8254	Nursery and Greenhouse Operators and Managers
H735.7435	Lock and Cable Ferry Operators and Related Occupations	I015.8255	Landscaping and Grounds Maintenance Contractors and Managers
H736.7436	Boat Operators	I016.8256	Supervisors, Landscape and Horticulture
H737.7437	Air Transport Ramp Attendants		
H8	TRADES HELPERS, CONSTRUCTION AND TRANSPORTATION LABOURERS AND RELATED OCCUPATIONS		

I017.8257	Aquaculture Operators and Managers	I17.826	Fishing Vessel Masters and Skippers and Fishermen / women
I02.843	Agriculture and Horticulture Workers	I171.8261	Fishing Masters and Officers
I021.8431	General Farm Workers	I172.8262	Fishing Vessel Skippers and Fishermen / women
I022.8432	Nursery and Greenhouse Workers	I18.844	Other Fishing and Trapping Occupations
I1 OCCUPATIONS UNIQUE TO FORESTRY OPERATIONS, MINING, OIL AND GAS EXTRACTION AND FISHING, EXCLUDING LABOURERS		I181.8441	Fishing Vessel Deckhands
I11.821	Supervisors, Logging and Forestry	I182.8442	Trappers and Hunters
I111.8211	Supervisors, Logging and Forestry	I2 PRIMARY PRODUCTION LABOURERS	
I12.822	Supervisors, Mining, Oil and Gas	I21.861	Primary Production Labourers
I121.8221	Supervisors, Mining and Quarrying	I211.8611	Harvesting Labourers
I122.8222	Supervisors, Oil and Gas Drilling and Service	I212.8612	Landscaping and Grounds Maintenance Labourers
I13.823	Underground Miners, Oil and Gas Drillers and Related Workers	I213.8613	Aquaculture and Marine Harvest Labourers
I131.8231	Underground Production and Development Miners	I214.8614	Mine Labourers
I132.8232	Oil and Gas Well Drillers, Servicers, Testers and Related Workers	I215.8615	Oil and Gas Drilling, Servicing and Related Labourers
I14.841	Mine Service Workers and Operators in Oil and Gas Drilling	I216.8616	Logging and Forestry Labourers
I141.8411	Underground Mine Service and Support Workers	J OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES	
I142.8412	Oil and Gas Well Drilling Workers and Services Operators	J0 SUPERVISORS IN MANUFACTURING	
I15.824	Logging Machinery Operators	J01.921	Supervisors, Processing Occupations
I151.8241	Logging Machinery Operators	J011.9211	Supervisors, Mineral and Metal Processing
I16.842	Logging and Forestry Workers	J012.9212	Supervisors, Petroleum, Gas and Chemical Processing and Utilities
I161.8421	Chain Saw and Skidder Operators	J013.9213	Supervisors, Food, Beverage and Tobacco Processing
I162.8422	Silviculture and Forestry Workers		

J014.9214	Supervisors, Plastic and Rubber Products Manufacturing	J12.941	Machine Operators and Related Workers in Metal and Mineral Products Processing
J015.9215	Supervisors, Forest Products Processing	J121.9411	Machine Operators, Mineral and Metal Processing
J016.9216	Supervisors, Textile Processing	J122.9412	Foundry Workers
J02.922	Supervisors, Assembly and Fabrication	J123.9413	Glass Forming and Finishing Machine Operators and Glass Cutters
J021.9221	Supervisors, Motor Vehicle Assembling	J124.9414	Concrete, Clay and Stone Forming Operators
J022.9222	Supervisors, Electronics Manufacturing	J125.9415	Inspectors and Testers, Mineral and Metal Processing
J023.9223	Supervisors, Electrical Products Manufacturing	J13.942	Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing
J024.9224	Supervisors, Furniture and Fixtures Manufacturing	J131.9421	Chemical Plant Machine Operators
J025.9225	Supervisors, Fabric, Fur and Leather Products Manufacturing	J132.9422	Plastics Processing Machine Operators
J026.9226	Supervisors, Other Mechanical and Metal Products Manufacturing	J133.9423	Rubber Processing Machine Operators and Related Workers
J027.9227	Supervisors, Other Products Manufacturing and Assembly	J134.9424	Water and Waste Plant Operators
J1	MACHINE OPERATORS IN MANUFACTURING	J14.943	Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing
J11.923	Central Control and Process Operators in Manufacturing and Processing	J141.9431	Sawmill Machine Operators
J111.9231	Central Control and Process Operators, Mineral and Metal Processing	J142.9432	Pulp Mill Machine Operators
J112.9232	Petroleum, Gas and Chemical Process Operators	J143.9433	Papermaking and Finishing Machine Operators
J113.9233	Pulping Control Operators	J144.9434	Other Wood Processing Machine Operators
J114.9234	Papermaking and Coating Control Operators	J145.9435	Paper Converting Machine Operators
		J146.9436	Lumber Graders and Other Wood Processing Inspectors and Graders

J15.944	Machine Operators and Related Workers in Textile Processing	J182.9472	Camera, Platemaking and Other Prepress Occupations
J151.9441	Textile Fibre and Yarn Preparation Machine Operators	J183.9473	Binding and Finishing Machine Operators
J152.9442	Weavers, Knitters and Other Fabric-Making Occupations	J184.9474	Photographic and Film Processors
J153.9443	Textile Dyeing and Finishing Machine Operators	J19.951	Machining, Metalworking, Woodworking and Related Machine Operators
J154.9444	Textile Inspectors, Graders and Samplers	J191.9511	Machining Tool Operators
J16.945	Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing	J192.9512	Forging Machine Operators
J161.9451	Sewing Machine Operators	J193.9513	Woodworking Machine Operators
J162.9452	Fabric, Fur and Leather Cutters	J194.9514	Metalworking Machine Operators
J163.9453	Hide and Pelt Processing Workers	J196.9516	Other Metal Products Machine Operators
J164.9454	Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing	J197.9517	Other Products Machine Operators
J17.946	Machine Operators and Related Workers in Food, Beverage and Tobacco Processing	J2 ASSEMBLERS IN MANUFACTURING	
J171.9461	Process Control and Machine Operators, Food and Beverage Processing	J21.948	Mechanical, Electrical and Electronics Assemblers
J172.9462	Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers	J211.9481	Aircraft Assemblers and Aircraft Assembly Inspectors
J173.9463	Fish Plant Workers	J212.9482	Motor Vehicle Assemblers, Inspectors and Testers
J174.9464	Tobacco Processing Machine Operators	J213.9483	Electronics Assemblers, Fabricators, Inspectors and Testers
J175.9465	Testers and Graders, Food and Beverage Processing	J214.9484	Assemblers and Inspectors, Electrical Appliance, Apparatus and Equipment Manufacturing
J18.947	Printing Machine Operators and Related Occupations	J215.9485	Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
J181.9471	Printing Machine Operators	J216.9486	Mechanical Assemblers and Inspectors
		J217.9487	Machine Operators and Inspectors, Electrical Apparatus Manufacturing

J22.949	Other Assembly and Related Occupations
J221.9491	Boat Assemblers and Inspectors
J222.9492	Furniture and Fixture Assemblers and Inspectors
J223.9493	Other Wood Products Assemblers and Inspectors
J224.9494	Furniture Finishers and Refinishers
J225.9495	Plastic Products Assemblers, Finishers and Inspectors
J226.9496	Painters and Coaters -- Industrial
J227.9497	Plating, Metal Spraying and Related Operators
J228.9498	Other Assemblers and Inspectors

**J3 LABOURERS IN PROCESSING,
MANUFACTURING AND UTILITIES**

J31.961	Labourers in Processing, Manufacturing and Utilities
J311.9611	Labourers in Mineral and Metal Processing
J312.9612	Labourers in Metal Fabrication
J313.9613	Labourers in Chemical Products Processing and Utilities
J314.9614	Labourers in Wood, Pulp and Paper Processing
J315.9615	Labourers in Rubber and Plastic Products Manufacturing
J316.9616	Labourers in Textile Processing
J317.9617	Labourers in Food, Beverage and Tobacco Processing
J318.9618	Labourers in Fish Processing
J319.9619	Other Labourers in Processing, Manufacturing and Utilities

OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION

Major Group 41

PROFESSIONAL OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICES AND RELIGION

411 Judges, Lawyers and Quebec Notaries

- 4111 Judges
- 4112 Lawyers and Quebec Notaries

412 University Professors and Assistants

- 4121 University Professors
- 4122 Post-Secondary Teaching and Research Assistants

413 College and Other Vocational Instructors

- 4131 College and Other Vocational Instructors

414 Secondary and Elementary School Teachers and Educational Counsellors

- 4141 Secondary School Teachers
- 4142 Elementary School and Kindergarten Teachers
- 4143 Educational Counsellors

415 Psychologists, Social Workers, Counsellors, Clergy and Probation Officers

- 4151 Psychologists
- 4152 Social Workers
- 4153 Family, Marriage and Other Related Counsellors
- 4154 Ministers of Religion
- 4155 Probation and Parole Officers and Related Occupations

416 Policy and Program Officers, Researchers and Consultants

- 4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers
- 4162 Economists and Economic Policy Researchers and Analysts
- 4163 Business Development Officers and Marketing Researchers and Consultants
- 4164 Social Policy Researchers, Consultants and Program Officers
- 4165 Health Policy Researchers, Consultants and Program Officers
- 4166 Education Policy Researchers, Consultants and Program Officers
- 4167 Recreation, Sports and Fitness Program Supervisors and Consultants
- 4168 Program Officers Unique to Government
- 4169 Other Professional Occupations in Social Science, n.e.c.

Major Group 42

PARAPROFESSIONAL OCCUPATIONS IN LAW, SOCIAL SERVICES, EDUCATION AND RELIGION

421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.

- 4211 Paralegal and Related Occupations
- 4212 Community and Social Service Workers
- 4213 Employment Counsellors
- 4214 Early Childhood Educators and Assistants
- 4215 Instructors and Teachers of Persons with Disabilities
- 4216 Other Instructors
- 4217 Other Religious Occupations

4111 Judges

Judges adjudicate civil and criminal cases and administer justice in courts of law. Judges preside over federal and provincial courts.

Example titles

chief justice
county court judge
Court of Queen's Bench justice
district court judge
family court judge

federal trial court justice
provincial court of appeal justice
small claims court judge
superior court justice
Supreme Court justice

Main duties

Judges perform some or all of the following duties:

- Preside over courts of law, interpret and enforce rules of procedure and make rulings regarding the admissibility of evidence
- Instruct the jury on laws that are applicable to the case
- Weigh and consider evidence in non-jury trials and decide legal guilt or innocence or degree of liability of the accused or defendant
- Pass sentence on persons convicted in criminal cases and determine damages or other appropriate remedy in civil cases
- Grant divorces and divide assets between spouses
- Determine custody of children between contesting parents and other guardians
- Enforce court orders for access or support
- Supervise other judges and court officers.

Judges may specialize in particular areas of law such as civil, criminal or family law.

Employment requirements

- Extensive experience as a lawyer or as a professor of law with continuous membership in the bar association is usually required.
- Membership in good standing with a provincial or territorial law society or bar association is required.
- Judges are appointed by federal or provincial cabinet.
- Those appointed to more senior positions in a court, such as chief justice, usually have experience as judges in that court.

Classified elsewhere

- Administrative tribunal judges (in 0411 *Government Managers – Health and Social Policy Development and Program Administration*)
- Citizenship court judges (in 1227 *Court Officers and Justices of the Peace*)
- Justices of the Peace (in 1227 *Court Officers and Justices of the Peace*)

4112 Lawyers and Quebec Notaries

Lawyers and Quebec notaries advise clients on legal matters, represent clients before administration boards and draw up legal documents such as contracts and wills. Lawyers also plead cases, represent clients before tribunals and conduct prosecutions in courts of law. Lawyers are employed in law firms and prosecutor's offices. Quebec notaries are employed in notary offices. Both lawyers and Quebec notaries are employed by federal, provincial and municipal governments and various business establishments or they may be self-employed. Articling students are included in this group.

Example titles

attorney	law partner
barrister	lawyer
corporate counsel	legal advisor
Crown attorney	notary (Quebec)
Crown prosecutor	solicitor
general counsel	

Main duties

Lawyers and Quebec notaries perform some or all of the following duties:

- Advise clients of their legal rights and all matters related to law
- Research legal precedents and gather evidence
- Plead clients' cases before courts of law, tribunals and boards (lawyers only)
- Draw up legal documents such as real estate transactions, wills, divorces and contracts, and prepare statements of legal opinions
- Negotiate settlements of civil disputes (lawyers only)
- Perform administrative and management functions related to the practice of law
- May act as mediator, conciliator or arbitrator
- May act as executor, trustee or guardian in estate and family law matters.

Lawyers and Quebec notaries may specialize in specific areas of the law such as criminal law (lawyers only), corporate law, contract law, taxation law, administrative law, international law, commercial law, real estate law, family and estate law, intellectual property law and labour law.

Employment requirements

Lawyers

- Two to three years of undergraduate studies or, in Quebec, completion of college program *and*
A bachelor's degree from a recognized law school
and
Successful completion of the bar examination and completion of a period of articling are required.
- Licensing by the provincial or territorial law society is required.

Notaries (Quebec)

- A bachelor's degree from a recognized law school and a Diploma of Notarial Law (D.D.N.) *or*
A master's degree of law with specialization in notarial law
and
A 32-week vocational training program are required.
- Registration with the Corporation of Notaries is required.

Additional information

- Lawyers wishing to practise in another province may be required to pass examinations set by the provincial law society.

4112 Lawyers and Quebec Notaries

Classified elsewhere

- Legal department directors (in 0114 *Other Administrative Services Managers*)
- Legal firm managers (in 0123 *Other Business Services Managers*)
- Notaries public and trademark agents who are not lawyers (in 4211 *Paralegal and Related Occupations*)
- Patent agents who are not lawyers or Quebec notaries (in 4161 *Natural and Applied Science Policy Researchers, Consultants and Program Officers*)

4121 University Professors

University professors teach courses to undergraduate and graduate students and conduct research at universities and degree-granting colleges. University professors who are heads of departments are included in this unit group.

Example titles

assistant professor, botany
associate professor, linguistics
chairperson, food sciences department
chairperson, physics department
department head, geography
English professor

lecturer – university
professor of computer science
professor of medicine
university instructor, engineering
university professor

Main duties

University professors perform some or all of the following duties:

- Teach one or more university subjects to undergraduate and graduate students
- Prepare and deliver lectures to students and conduct laboratory sessions or discussion groups
- Prepare, administer and grade examinations, laboratory assignments and reports
- Advise students on course and academic matters and career decisions
- Direct research programs of graduate students and advise on research matters
- Conduct research in field of specialization and publish findings in scholarly journals or books
- May serve on faculty committees dealing with such matters as curriculum planning and degree requirements, and perform a variety of administrative duties
- May represent their universities as speakers and guest lecturers
- May provide professional consultative services to government, industry and private individuals.

University professors specialize in a particular subject matter such as biology, chemistry, anatomy, sociology, business administration or law.

Employment requirements

- A doctoral degree in the field of specialization is required.
- Licences or professional certification may be required for professors teaching future practitioners in certain professionally regulated fields, such as medicine, engineering, architecture, psychology or law.

Additional information

- University professors who are also practitioners in their field of specialization must have the appropriate licences or certification.
- Progression to senior positions within a department, faculty or university is possible with experience.

Classified elsewhere

- *Administrators – Post-Secondary Education and Vocational Training (0312)*
- *College and Other Vocational Instructors (4131)*
- *Post-Secondary Teaching and Research Assistants (4122)*

4122 Post-Secondary Teaching and Research Assistants

Post-secondary teaching and research assistants assist university professors, community college and CEGEP teachers and other faculty members in teaching and research activities at universities and colleges.

Example titles

college teaching assistant
graduate assistant – university

postdoctoral fellow
research assistant, university

Main duties

Post-secondary teaching assistants perform some or all of the following duties:

- Organize reference materials, visual aids and other materials as required by university professors or college teachers for lectures
- Conduct seminars, discussion groups and laboratory sessions to supplement lectures
- Assist in preparation and administration of examinations
- Grade examinations, term papers and laboratory reports.

Research assistants perform some or all of the following duties:

- Conduct literature reviews, surveys, laboratory experiments and other research for use in scholarly publications
- Compile research results and assist professor in analysis of results and preparation of journal articles or papers.

Post-secondary teaching and research assistants specialize in a subject matter based on their field of study.

Employment requirements

- Enrolment in a university, college or CEGEP program is required.

Classified elsewhere

- *Elementary and Secondary School Teacher Assistants (6472)*

4131 College and Other Vocational Instructors

This unit group includes instructors who teach applied arts, academic, technical and vocational subjects to students at community colleges, CEGEPs, agricultural colleges, technical and vocational institutes, language schools and other college level schools. This unit group also includes trainers who are employed by private training establishments, companies, community agencies and governments to deliver internal training or development courses. College teachers who are heads of departments are included in this group.

Example titles

CEGEP teacher
college teacher
commercial art instructor
community college teacher
company trainer
computer training instructor
department chairperson – college

department head – CEGEP
firefighting instructor
language school instructor
teacher – institute of technology
teacher, legal assistant program
training officer – company
vocational institute teacher

Main duties

College and other vocational instructors perform some or all of the following duties:

- Teach students using a systematic plan of lectures, demonstrations, discussion groups, laboratory work, shop sessions, seminars, case studies, field assignments and independent or group projects
- Develop curriculum and prepare teaching materials and outlines for courses
- Prepare, administer and mark tests and papers to evaluate students' progress
- Advise students on program curricula and career decisions
- Provide individualized tutorial/remedial instructions
- Supervise independent or group projects, field placements, laboratory work or hands-on training
- Supervise teaching assistants
- May provide consultation services to government, business and other organizations
- May serve on committees concerned with matters such as budgets, curriculum revision, and course and diploma requirements.

These instructors specialize in particular fields or areas of study such as visual arts, dental hygiene, welding, engineering technology, policing, computer software, management and early childhood education.

Employment requirements

- A bachelor's degree, a college diploma or demonstrated expertise in the field of instruction is required.

- A master's degree in the field of instruction may be required.
- A certificate, diploma or degree in adult education may be required.
- For instructors of trades, completion of apprenticeship training and industry or trade certification are required. Additional courses in teaching or a provincial teaching certificate may be required.

Additional information

- In Québec, trades are taught in the secondary school system.
- Progression to administrative positions in post-secondary education is possible with experience.

Classified elsewhere

- Instructors teaching non-academic or non-vocational courses (in 4216 *Other Instructors*)
- *Secondary School Teachers* (4141)
- *University Professors* (4121)

4141 Secondary School Teachers

Secondary school teachers prepare and teach academic, technical, vocational or specialized subjects at public and private secondary schools. Secondary school teachers who are heads of departments and high school librarians are included in this group.

Example titles

adult education teacher, secondary school
biology teacher, high school
commerce teacher, secondary school
department head, secondary school
English as a second language teacher, high school
English teacher, secondary school
French as a second language teacher, high school
high school teacher, special education

history teacher, secondary school
librarian, high school
remedial teacher – secondary school
secondary school teacher
supply teacher, high school
trades instructor – secondary school
vocational teacher, high school

Main duties

Secondary school teachers perform some or all of the following duties:

- Prepare subject material for presentation to students according to an approved curriculum
- Teach students using a systematic plan of lectures, discussions, audio-visual presentations, and laboratory, shop and field studies
- Assign and correct homework
- Prepare, administer and correct tests
- Evaluate progress, determine individual needs of students and discuss results with parents and school officials
- Prepare and implement remedial programs for students requiring extra help
- Participate in staff meetings, educational conferences and teacher training workshops
- May advise students on course selection and on vocational and personal matters
- May supervise student teachers.

Secondary school teachers may specialize in such areas as mathematics, English, French, special education or second language instruction.

Secondary school teachers of vocational and trades subjects may specialize in areas such as hairdressing or auto mechanics.

Employment requirements

- Teachers of academic subjects require a bachelor's degree in education which is often preceded by a bachelor's degree in the arts or sciences.

- Teachers of vocational or technical subjects require a bachelor's degree in education which is usually preceded by specialized training or experience in the subject.
- Instructors of trades in Quebec require completion of an apprenticeship training program and industry or trade certification.
- Department heads usually require several years of teaching experience.
- To specialize in special education or English or French as a second language, additional training is required.
- A provincial teaching certificate is required.

Additional information

- Progression to vice-principal or other administrative positions in the education system is possible with experience.

Classified elsewhere

- *College and Other Vocational Instructors* (4131)
- *Educational Counsellors* (4143)
- *Elementary and Secondary School Teacher Assistants* (6472)
- *Elementary School and Kindergarten Teachers* (4142)
- *School Principals and Administrators of Elementary and Secondary Education* (0313)
- Teachers of non-academic or vocational courses (in 4216 *Other Instructors*)
- Teachers teaching life skills courses to persons with disabilities (in 4215 *Instructors and Teachers of Persons with Disabilities*)

4142 Elementary School and Kindergarten Teachers

Elementary school and kindergarten teachers teach basic subjects such as reading, writing and arithmetic or specialized subjects such as English or French as a second language at public and private elementary schools. Elementary school librarians are included in this unit group.

Example titles

elementary school teacher	kindergarten teacher
elementary school teacher, English as a second language	librarian, elementary school
elementary school teacher, French as a second language	primary school teacher
French immersion teacher – elementary school	remedial teacher – elementary school special education teacher – elementary school supply teacher – elementary school

Main duties

- Elementary school and kindergarten teachers perform some or all of the following duties:
- Prepare courses for presentation to students according to approved curriculum
 - Teach students using a systematic plan of lessons, discussions, audio-visual presentations and field trips
 - Lead students in activities to promote their physical, mental and social development and their school readiness
 - Assign and correct homework
 - Prepare, administer and correct tests
 - Evaluate the progress of students and discuss results with students, parents and school officials
 - Identify children's individual learning needs
 - Prepare and implement remedial programs for students requiring extra help
 - Participate in staff meetings, educational conferences and teacher training workshops
 - May supervise teachers' aides and student teachers.

Elementary school and kindergarten teachers may specialize in such areas as special education or second language instruction.

Employment requirements

- A bachelor's degree in education is required.
- Additional training is required to specialize in special education or second language instruction.
- A provincial teaching certificate is required. Additional certification is required to teach English or French as a second language.

Additional information

- Progression to education consultant or school principal is possible with experience.

Classified elsewhere

- *Early Childhood Educators and Assistants* (4214)
- *Elementary and Secondary School Teacher Assistants* (6472)
- *School Principals and Administrators of Elementary and Secondary Education* (0313)
- *Secondary School Teachers* (4141)
- Teachers teaching life skills to persons with disabilities (in 4215 *Instructors and Teachers of Persons with Disabilities*)

4143 Educational Counsellors

Educational counsellors advise current and prospective students on educational issues, career planning and personal development and co-ordinate the provision of counselling services to students, parents, teachers, faculty and staff. They are employed by school boards, universities and colleges, technical institutes, correctional facilities and government agencies.

Example titles

academic counsellor
educational counsellor
guidance counsellor

school counsellor
student counsellor

Main duties

Educational counsellors perform some or all of the following duties:

- Counsel students regarding educational issues such as course and program selection, time tables and scheduling, school adjustment, attendance problems and study skills
- Counsel students regarding career or vocational issues including career exploration and planning, résumé preparation, job interview skills and job search strategies and make available to them a wide range of educational and occupational information
- Counsel students regarding personal and social issues such as substance abuse, depression, sexuality, eating disorders, anxiety, self-esteem, family problems, relationship and interpersonal skills and anger management
- Counsel students in crisis situations such as dealing with the death of a friend or family member, suicidal tendencies and abuse situations
- Consult with teachers and parents or faculty and other professionals such as psychologists, speech therapists and social workers regarding various issues and concerns, and with administrators and community agencies regarding programs and referrals
- Co-ordinate co-op and school-to-work transition programs, and the provision of counselling and information services to students, parents, teachers, faculty and staff such as career information services, professional development sessions and interactions with other educational institutions
- Supervise peer counselling programs in school settings
- Administer and interpret standardized intelligence, personality, vocational, aptitude and interest tests

- Develop and co-ordinate study skills groups or workshops in colleges and universities on topics such as note-taking, test or examination anxiety and preparation strategies and time management skills
- Co-ordinate or participate in student orientation programs in colleges or universities
- Arrange for employers to recruit graduating college and university students, and students for co-op education work terms
- Visit colleges and secondary schools to provide academic information to prospective students, their parents and educational counsellors
- May supervise field experience for graduate students in counselling
- May teach regular classes.

Employment requirements

- A bachelor's degree in social sciences or education is required for counsellors in school settings.
- A master's degree in counselling or a related field such as educational psychology, developmental psychology or social work is usually required.
- Academic counsellors in post-secondary settings require an undergraduate degree and may require a graduate degree. A particular academic specialization may also be required.
- A teacher's certificate from the province of employment and some teaching experience is usually required for counsellors in school settings.
- In Quebec, membership in the professional association is mandatory for counsellors in school settings.

4143 Educational Counsellors

- Educational counsellors in colleges and universities may require licensing from a provincial regulatory body governing psychologists, guidance counsellors or social workers.

Additional information

- Elementary school counsellors generally provide more social and personal counselling whereas vocational and academic counselling is provided more by high school counsellors.
- Educational counsellors in colleges, universities and other settings may specialize in academic counselling, personal or social issues/problems counselling or career/vocational counselling.

Classified elsewhere

- Family, Marriage and Other Related Counsellors* (4153)
- School psychologists (in 4151 *Psychologists*)
- Secondary School Teachers* (4141)
- Social Workers* (4152)

4151 Psychologists

Psychologists assess and diagnose behavioural, emotional and cognitive disorders, counsel clients, provide therapy and research and apply theory relating to behaviour and mental processes. Psychologists help clients work toward the maintenance and enhancement of physical, intellectual, emotional, social and interpersonal functioning. Psychologists work in private practice or in institutions such as clinics, correctional facilities, hospitals, mental health facilities, rehabilitation centres, community service organizations, businesses, schools and universities, and government and private research agencies.

Example titles

clinical psychologist
experimental psychologist
psychological associate

psychologist
research psychologist

Main duties

Psychologists perform some or all of the following duties:

- Examine and assess behaviour, diagnose behavioural, emotional and cognitive disorders, counsel clients and provide therapy
- Help clients manage physical illness and disorders
- Counsel individuals and groups to achieve more effective personal, social and vocational development and adjustment and offer mediation services
- Use standard psychological tests for assessment
- Plan intervention programs and conduct program evaluation
- Apply psychological theory and principles regarding behaviour and mental processes such as learning, memory, perception and language development
- Formulate hypotheses and experimental designs, review literature, conduct studies and publish research papers, educational texts and articles
- Deliver presentations at conferences, workshops or symposia
- Provide consultation services to government and other organizations.

Psychologists may specialize in applied psychology or experimental research. Sub-specialties include behavioural psychology, child psychology, cognitive psychology, developmental psychology, educational and school psychology, industrial psychology, neuropsychology, social psychology or sports psychology.

Employment requirements

- A doctoral degree in psychology is required for the designation "Psychologist" in Ontario, Manitoba and British Columbia.
- A master's degree in psychology is required for the designation "Psychologist" in Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Saskatchewan, Alberta, Nunavut and the Northwest Territories.
- A master's degree in psychology is required for the designation "Psychological Associate" in Ontario and Manitoba.
- In Prince Edward Island, a doctoral degree is required to work in private practice, or a master's degree with practice limited to institutions and agencies.
- A period of supervised practical experience is required in most jurisdictions.
- Successful completion of the written Examination for Professional Practice in Psychology (EPPP) is required in most provinces.
- Oral examinations and board interviews are also required in some provinces.
- Registration with a regulatory body is required in all provinces, Nunavut and the Northwest Territories.
- Membership in the provincial professional association for psychologists is mandatory in all provinces, Nunavut and the Northwest Territories.
- Psychologists become specialized in a particular area through training and experience.

4151 Psychologists

Additional information

- Psychological associates may be granted permission by provincial regulatory authorities to perform duties normally restricted to psychologists, specifically diagnosing psychological disorders and communicating diagnoses to clients.

Classified elsewhere

- Psychiatrists (in 3111 *Specialist Physicians*)
- Psychologists who teach at universities (in 4121 *University Professors*)
- Psychology research assistants, non-university (in 4164 *Social Policy Researchers, Consultants and Program Officers*)
- Psychology research assistants, university (in 4122 *Post-Secondary Teaching and Research Assistants*)
- Psychometrists (in 4169 *Other Professional Occupations in Social Science, n.e.c.*)

4152 Social Workers

Social workers help individuals, couples, families, groups, communities and organizations develop the skills and resources they need to enhance social functioning and provide counselling, therapy and referral to other supportive social services. Social workers also respond to other social needs and issues such as unemployment, racism and poverty. They are employed by hospitals, school boards, social service agencies, child welfare organizations, correctional facilities, community agencies, employee assistance programs and Aboriginal band councils, or they may work in private practice.

Example titles

co-ordinator of social work
medical social worker
psychiatric social worker

social worker
social work supervisor

Main duties

Social workers perform some or all of the following duties:

- Interview clients individually, in families, or in groups, to assess their situation and problems and determine the types of services required
- Provide counsel and therapy to assist clients in developing skills to deal with and resolve their social and personal problems
- Plan programs of assistance for clients including referral to agencies that provide financial assistance, legal aid, housing, medical treatment and other services
- Investigate cases of child abuse or neglect and take authorized protective action when necessary
- Serve as members on interdisciplinary teams of professionals working with client groups
- Act as advocates for client groups in the community, lobby for solutions to problems directly affecting client groups and develop prevention and intervention programs to meet community needs
- Develop or advise on social policy legislation, conduct social research and assist in community development
- Provide mediation services and psychosocial assessments
- Evaluate the effectiveness of counselling and social programs
- May provide public education and consultation to professionals or groups regarding counselling services, issues and methods
- May supervise other social workers.

Social workers may specialize in fields of practice such as child welfare, family services, corrections, gerontology or addictions.

Employment requirements

- A bachelor's degree in social work is required in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, British Columbia, Nunavut and the Northwest Territories.
- In Alberta, a bachelor's degree or diploma in social work is required.
- In Saskatchewan, a bachelor's degree in social work is usually required.
- Supervised practical experience is usually required.
- Successful completion of provincial written and oral examinations may be required.
- Registration with a provincial governing body is mandatory to practise as a social worker in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario and Alberta.
- Use of the titles "Social Worker" and "Registered Social Worker" is regulated in all provinces.
- Membership in a provincial association of social workers is usually required.

Classified elsewhere

- *Community and Social Service Workers* (4212)
- *Educational Counsellors* (4143)
- *Family, Marriage and Other Related Counsellors* (4153)
- *Managers in Social, Community and Correctional Services* (0314)

4153 Family, Marriage and Other Related Counsellors

Family, marriage and other related counsellors assist individuals and groups of clients to identify, understand and overcome personal problems and achieve personal objectives. They are employed by counselling centres, social service agencies, group homes, government agencies, family therapy centres, and health care and rehabilitation facilities, or they may work in private practice.

Example titles

addictions counsellor
bereavement counsellor
child and youth counsellor
family counsellor
marriage counsellor

registered clinical counsellor
registered marriage and family therapist
rehabilitation counsellor
sex therapist
vocational rehabilitation counsellor

Main duties

Family, marriage and other related counsellors perform some or all of the following duties:

- Interview clients, prepare case histories and assess problems
- Conduct vocational testing and psychometric assessment
- Develop and implement counselling and intervention programs to assist clients in determining goals and means of attaining them
- Counsel clients, provide therapy and mediation services, and facilitate group sessions
- Liaise with community agencies or partners, and identify additional or alternative services and provide referrals
- Evaluate the effectiveness of counselling programs and interventions, and clients' progress in resolving identified problems and movement toward defined objectives
- Follow up on results of counselling programs and clients' adjustments
- Prepare assessment, progress, follow-up and court reports
- May supervise other counsellors, social service staff and assistants
- May provide public education and consultation to other professionals or groups regarding counselling services, issues and methods
- May provide witness testimony in court proceedings
- May conduct research, publish research papers, educational texts and articles and deliver presentations at conferences.
- May participate in fundraising activities.

Family, marriage and other related counsellors often specialize in dealing with a specific client group such as injured workers, or with specific problems, such as drug and alcohol addiction, marital difficulties or behavioural disorders.

Employment requirements

- A master's degree in the field of counselling, mental health or a related social service discipline is usually required.
- In Quebec, a master's degree in psychoeducation is required to practise as a psycho-educator.
- An undergraduate degree or college diploma in a social science is required for certain areas of counselling.
- Membership with a provincial association for marriage and family therapists or clinical counsellors is required to use the title "Registered Marriage and Family Therapist" or "Registered Clinical Counsellor", and in Quebec, to use the title "marriage and family therapist (MFT)", "family therapist (FT)" or "marriage therapist (MT)". Membership with a provincial association may be required by some employers.
- In Quebec, membership in the professional association is mandatory for counsellors and psychoeducators.
- Registered marriage and family therapists and registered clinical counsellors must meet strict criteria involving post-graduate education and a period of supervised clinical work with clients.

Additional information

- Counsellors usually become specialized in a particular area through training and experience.
- Progression to social service management positions is possible with additional training and experience.

4153 Family, Marriage and Other Related Counsellors

Classified elsewhere

- *Community and Social Service Workers* (4212)
- *Educational Counsellors* (4143)
- *Employment Counsellors* (4213)
- *Managers in Social, Community and Correctional Services* (0314)
- *Social Workers* (4152)

4154 Ministers of Religion

Ministers of religion conduct religious services, administer the rites of a religious faith or denomination, provide spiritual and moral guidance and perform other functions associated with the practice of a religion. Ministers of religion perform these duties in churches, synagogues, temples or other places of worship. They may also work in other institutions such as schools, hospitals and prisons.

Example titles

archbishop	imam
bishop	minister
cardinal	moderator
chancellor	pastor
chaplain	priest
evangelist	rabbi
granthi	

Main duties

Ministers of religion perform some or all of the following duties:

- Conduct religious services
- Administer rites of faiths such as marriages and funerals
- Provide spiritual and moral guidance to members of a religious faith
- Supervise, plan and administer programs of religious education
- May participate in humanitarian endeavours, social services and welfare activities
- May share in the administrative and financial operation of a religious community
- May provide consultation services to government and other organizations.

Employment requirements

- Educational requirements vary, depending on the religion, and range from the completion of a college or other program in religious studies to a master's of divinity degree.
- A period of study with a senior minister is usually required.

Additional information

- Progression to senior positions within a religious order is possible with experience.

Classified elsewhere

- *Other Religious Occupations* (4217)

4155 Probation and Parole Officers and Related Occupations

Probation officers monitor the conduct and behaviour of criminal offenders serving probation terms. Parole officers monitor the reintegration of criminal offenders serving the remainder of sentences while conditionally released into the community on parole. Classification officers assess inmates and develop rehabilitation programs for criminal offenders who are incarcerated in correctional facilities. They are employed by federal and provincial governments and work in the community and in correctional facilities.

Example titles

case manager – corrections
classification officer, correctional institution
parole officer

probation officer
youth worker – corrections

Main duties

Probation and parole officers perform some or all of the following duties:

- Interview offenders, police, family, friends, school authorities and employers to prepare pre-sentence reports and assess offenders' prospects for successful reintegration into the community
- Plan rehabilitation programs with offenders, establishing rules of conduct, goals and objectives
- Refer offenders to community and social service programs, as required
- Supervise the terms of a probation order and attend court
- Interview probationers and parolees regularly to evaluate their progress in accomplishing goals and maintaining the terms specified in their probation contracts and rehabilitation plans
- Recommend remedial action or initiate court action when terms of probation or parole are violated
- May perform administrative duties and supervise support staff
- May participate in policy development.

Classification officers, correctional institutions, perform some or all of the following duties:

- Interview inmates to assess adjustment problems and develop suitable rehabilitation programs
- Prepare classification reports recommending type of incarceration and types of interventions considered most beneficial for the rehabilitation of the inmates
- Plan rehabilitation programs with offenders, identifying needs and setting out goals and objectives
- Liaise with the inmates' families and contacts in the community to maintain established bonds outside of the institution

- Advise and counsel inmates regarding their problems and evaluate their progress.

Employment requirements

- A bachelor's degree in social work, criminology, psychology, sociology or other related social science discipline is required.
- A master's degree in social work, criminology, psychology or other related social science discipline may be required.

Additional information

- Progression to correctional service management positions is possible with additional training or experience.

Classified elsewhere

- *Community and Social Service Workers* (4212)
- *Correctional Service Officers* (6462)
- Correctional services managers (in 0314 *Managers in Social, Community and Correctional Services*)
- *Social Workers* (4152)

4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers

Natural and applied science policy researchers, consultants and program officers conduct research, prepare reports, provide consultation and advice and administer programs in a variety of areas related to the natural and applied sciences. They are employed by federal, provincial and municipal governments, computer and office furniture manufacturers, educational institutions, research organizations, consulting firms, environmental and conservation organizations, or they may be self-employed.

Example titles

energy policy analyst	occupational hygienist
environmental impact analyst	patent agent
environmental issues lobbyist	program officer, natural and applied sciences
ergonomist	recycling program co-ordinator
fisheries analyst	scientific consultant
human factors specialist (except engineer)	supervisor, environmental program development
industrial hygienist	transportation program analyst
natural resources policy analyst	transportation safety analyst

Main duties

The following is a summary of main duties for some occupations in this group:

- Ergonomists or human factors specialists conduct research and advise on, and intervene in the physical, social and psychological interrelationships between persons, their equipment and working or living environments to ensure that the design, configuration and use of equipment, procedures and environmental conditions maximize safety, productivity and comfort.
- Occupational or industrial hygienists study, evaluate and control physical, chemical and biological hazards and stresses in the workplace. They report and document investigations and conclusions, suggest changes to work environments and processes and provide information to workers and managers or employers on methods to reduce the risk of injury or illness from specific occupational hazards. They may also teach safe work procedures, participate in emergency response planning, testify at hearings and report findings at scientific conferences or in scientific journals.
- Patent agents advise clients on elements of patent law and on the patentability of inventions, conduct patent searches, prepare patent applications and represent clients before the patent office.

- Science policy and program officers conduct research and advise on policies or develop or administer programs related to transportation, communications, natural resources, agriculture, the environment, energy, land use, recycling and other scientific fields. They promote public awareness and education on such issues as utilization of natural resources, the environment, and reprocessing and reduction of waste.

Employment requirements

- A bachelor's degree or college diploma in a related scientific or technical discipline is usually required for occupations in this unit group.
- A master's degree in a related scientific discipline may be required.
- Occupational hygienists may require certification by The Canadian Registration Board of Occupational Hygienists or le Conseil d'accréditation en hygiène industrielle du Québec.
- Patent agents require 12 months of work experience in the patent field and successful completion of examinations set by the Commissioner of Patents. They may also be required to be listed in the register of patent agents.

Additional information

- Progression to supervisory or managerial positions in these fields is possible with experience.

4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers

- Certification of ergonomists through the Canadian Ergonomics Certification Board leading to the designation "Certified Ergonomist" (C.Ergo) is available.

Classified elsewhere

- *Architecture and Science Managers* (0212)
- *Health Policy Researchers, Consultants and Program Officers* (4165)
- *Life Science Professionals* (212)
- *Physical Science Professionals* (211)
- Professional occupations in engineering (in 213 *Civil, Mechanical, Electrical and Chemical Engineers* and 214 *Other Engineers*)

4162 Economists and Economic Policy Researchers and Analysts

Economists and economic policy researchers and analysts conduct research, monitor data, analyze information and prepare reports and plans to resolve economic and business problems and develop models to analyze, explain and forecast economic behaviour and patterns. They advise on matters such as finance, fiscal and monetary policy, international trade, agricultural and natural resource commodities and labour and industrial markets. They are employed by government departments and agencies and throughout the private sector in associations, unions, research organizations, banks and investment firms.

Example titles

agricultural economist

financial economist

economic advisor

industrial economist

economic analyst

international trade economist

economic policy analyst

investment economist

economist

labour economist

economist, natural resources

tax economist

energy economist

trade economist

Main duties

Economists and economic policy researchers and analysts perform some or all of the following duties:

- Conduct research and develop models to analyze, explain and forecast economic behaviour and patterns, and devise methods for collection and analysis of data
- Forecast production and consumption of specific products and services based on records of past production and consumption and general economic and industry-specific conditions
- Prepare forecasts of income and expenditure, interest rates and exchange rates
- Analyze factors which determine economic growth and advise government agencies on policies to increase economic activities
- Analyze factors which determine labour force participation, employment, wages, unemployment and other labour market outcomes
- Study mathematical formulae and statistical techniques and apply them to the testing and quantifying of economic theories and the solution of economic problems
- Study the nature of money, credit and the operation of banks and other financial institutions to develop monetary policies and forecasts of financial activity
- Monitor economic data to assess the effectiveness, and advise on the appropriateness, of monetary and fiscal policies

- Examine problems related to the economic activity of individual companies
- Examine financial methods, production costs and techniques and marketing policies to recommend possible improvements
- Examine statistical data on the exchange of goods and services among nations
- Forecast production and consumption of renewable resources and supply, consumption and depletion of non-renewable resources
- Conduct research on market conditions in local, regional or national area to set sales and pricing levels for goods and services, to assess market potential and future trends and to develop business strategies
- Monitor regional and local economic trends
- Study regulatory processes and provide material in support of legal proceedings with government and other parties.

Employment requirements

- A master's degree in economics or in a related discipline such as business administration or statistics is usually required.
- A doctorate in economics may be required.

Additional information

- Progression to managerial positions in economics is possible with experience.

4162 Economists and Economic Policy Researchers and Analysts

Classified elsewhere

- *Business Development Officers and Marketing Researchers and Consultants* (4163)
- Economists who teach at universities (in 4121 *University Professors*)
- *Financial and Investment Analysts* (1112)
- *Government Managers – Economic Analysis, Policy Development and Program Administration* (0412)
- Labour policy analysts (in 4164 *Social Policy Researchers, Consultants and Program Officers*)

4163 Business Development Officers and Marketing Researchers and Consultants

Business development officers and marketing researchers and consultants conduct research, formulate policies and manage programs to stimulate industrial and commercial business investment or tourism in urban and rural areas or to promote commercial or industrial products and services. They are employed by government departments, international organizations, marketing firms and business associations or may be self-employed.

Example titles

business development officer
community economic development consultant
economic development officer
industrial development officer
marketing analyst

marketing consultant
market researcher
regional development analyst
tourism development officer
tourism industry consultant

Main duties

Business development officers and marketing researchers and consultants perform some or all of the following duties:

- Develop policies and administer programs to promote industrial and commercial business investment in urban and rural areas
- Design market research questionnaires
- Conduct social or economic surveys on local, regional or national areas to assess development potential and future trends
- Plan development projects and co-ordinate activities with representatives of a wide variety of industrial and commercial enterprises, community and business associations and government agencies
- Assess business opportunities and develop strategies to attract venture capital
- Respond to enquiries from members of the business community and general public concerning development opportunities
- Review and evaluate commercial or industrial development proposals and provide advice on procedures and requirements for government approval
- Conduct surveys and analyze data on the buying habits and preferences of wholesale or retail consumers
- Evaluate customer service and store environments
- Conduct comparative research on marketing strategies for industrial and commercial products
- Develop social and economic profiles of urban and rural areas to encourage industrial and commercial investment and development.

- Prepare reports, research papers, educational texts or articles
- Plan and develop E-commerce strategies
- Provide consultation on planning and starting of new businesses.

Employment requirements

- A bachelor's degree in economics, commerce, business administration or public administration is required.
- Certification as a certified economic developer (Ec.D.) may be required.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- Economic development managers (in 0412 *Government Managers – Economic Analysis, Policy Development and Program Administration*)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Financial and Investment Analysts* (1112)
- International development or aid officers (in 4164 *Social Policy Researchers, Consultants and Program Officers*)
- Marketing managers (in 0611 *Sales, Marketing and Advertising Managers*)
- *Other Financial Officers* (1114)
- *Urban and Land Use Planners* (2153)

4164 Social Policy Researchers, Consultants and Program Officers

Social policy researchers, consultants and program officers conduct research, develop policy and implement or administer programs in areas such as consumer affairs, employment, home economics, immigration, law enforcement, corrections, human rights, housing, labour, family services, foreign aid and international development. They are employed by government departments and agencies, industry, hospitals, educational institutions, consulting establishments, professional associations, research institutes, non-government organizations and international organizations or they may be self-employed.

Example titles

Aboriginal issues lobbyist	labour policy analyst
child welfare policy analyst	policy analyst, immigration
community social development officer	policy consultant, employment equity
consumer advisor	program consultant, community policing
home economist	social policy researcher
housing policy analyst	social services planner
human rights officer	social survey researcher (except statistician)
international aid and development project officer	

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Social policy researchers develop social programs, social legislation, or proposals based on demographic, social and economic analysis and the evaluation of pilot projects.
- Home economists conduct research, advise consumers on the selection and proper use of food products, textiles and other consumer goods and teach household management skills. They may also provide consultative services in the areas of development and promotion of new food products, retail buying, social program administration and small business endeavours.
- Housing policy analysts identify and assess economic, demographic, and social developments and report on their implications for housing policy.
- International aid and development project officers plan, organize and administer foreign aid and international development policies and programs.
- Social survey researchers develop questionnaires, co-ordinate and conduct surveys, analyse data, and compile and interpret statistics on social issues and policy areas.

- Social services planners conduct research, develop social programs, assess, coordinate and develop awareness of existing social services, and ensure that duplication of services is avoided. They may also work with land use planners to determine the impact of major land use plans for transportation, housing and recreational facilities projects.

Employment requirements

- A bachelor's degree or college diploma in a social science or related discipline, or in business administration is usually required.
- A master's degree in a social science or related discipline or in business administration may be required.
- Home economists require a bachelor's degree in home economics, home economics education, human ecology, nutrition and food sciences or family and consumer studies.
- Registration is available, but voluntary, for the designation "Registered Home Economist" in New Brunswick, Ontario, Manitoba and Alberta, and "Registered Professional Home Economist" in British Columbia.

Additional information

- Progression to managerial positions is possible with experience.

4164 Social Policy Researchers, Consultants and Program Officers

Classified elsewhere

- *Business Development Officers and Marketing Researchers and Consultants* (4163)
- *Community and Social Service Workers* (4212)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Government Managers – Health and Social Policy Development and Program Administration* (0411)
- *Health Policy Researchers, Consultants and Program Officers* (4165) and *Elementary School and Kindergarten Teachers* (4142)
- Home economics teachers (in 4141 *Secondary School Teachers*)
- Non-government managers in social policy (in 0314 *Managers in Social, Community and Correctional Services*)
- *Social Workers* (4152)

4165 Health Policy Researchers, Consultants and Program Officers

Health policy researchers, consultants and program officers conduct research, produce reports and administer health care policies and programs. They are employed by government departments and agencies, consulting establishments, universities, research institutes, hospitals, community agencies, educational institutions, professional associations, non-governmental organizations and international organizations.

Example titles

consultant, drug and alcohol abuse
consultant, health care
consultant, mental health programs
health care planner
health promotion program officer

health services researcher
planning officer, child health care programs
policy development officer, nursing homes
research analyst, health policy

Main duties

Health policy researchers, consultants and program officers perform some or all of the following duties:

- Assist in developing government health policy by reviewing relevant literature, conducting interviews, collecting and analysing statistical data, and providing advice to senior managers and officials on issues such as health promotion, regulation, standards and financing
- Design and implement health projects or programs
- Maintain, update and manage health information databases
- Compile and analyse statistical information provided by private and public health care institutions and organizations and produce reports
- Monitor and evaluate health care programs operated by government departments and agencies or private organizations
- Assess compliance with health standards and identify remedial action if necessary
- Conduct evaluations and assessments of health projects and programs
- Provide consulting services to clients in private establishments or government departments or agencies
- Respond to internal and external program and policy information requests
- Produce newsletters, magazines and other documents to provide information to association or organization members or the general public
- Present the views of an association or organization to politicians, government officials, the media or the general public.

Health policy researchers, consultants and program officers may specialize in a particular area of health policy development, research or program administration such as addiction research.

Employment requirements

- A bachelor's degree or college diploma in health science, public administration, recreation administration or hospital administration, or a bachelor's degree in social science, is required.
- A graduate degree in health, social science or an administrative discipline may be required.
- Several years of experience in the health field as a health care professional or as a community or social service worker are usually required.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Community and Social Service Workers (4212)*
- *Education Policy Researchers, Consultants and Program Officers (4166)*
- *Government Managers – Health and Social Policy Development and Program Administration (0411)*
- *Managers in Health Care (0311)*
- *Social Policy Researchers, Consultants and Program Officers (4164)*

4166 Education Policy Researchers, Consultants and Program Officers

Education policy researchers, consultants and program officers conduct research, produce reports and administer elementary, secondary and post-secondary education policies and programs. They are employed by government departments, school boards, research institutes, professional associations and educational and other organizations throughout the public and private sectors, or they may be self-employed.

Example titles

co-ordinator, special education	education program co-ordinator
curriculum developer	education program officer
curriculum planner	education researcher
education consultant	language assessor
education outreach program co-ordinator	supervisor, education policy
education policy officer	

Main duties

Education policy researchers, consultants and program officers perform some or all of the following duties:

- Conduct research, produce reports and administer education policies and programs
- Evaluate curriculum programs and recommend improvements
- Develop the structure, content and objectives of new programs
- Conduct statistical analyses to determine cost and effectiveness of education policies and programs
- Provide ongoing professional development, training and consultative services to teachers and other professionals throughout the public and private sector
- Develop teaching materials and other resources for program delivery
- Deliver presentations at conferences, workshops and symposia
- May supervise the work of other education policy researchers, consultants or program officers
- May administer specialized testing and assessment programs.

- A teacher's certificate for the province of employment is usually required when employed by provincial education ministries.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- *College and Other Vocational Instructors* (4131)
- *Educational Counsellors* (4143)
- *Elementary School and Kindergarten Teachers* (4142)
- *Government Managers – Education Policy Development and Program Administration* (0413)
- Psychology research assistants (non-university) (in 4164 *Social Policy Researchers, Consultants and Program Officers*)
- *Secondary School Teachers* (4141)

Employment requirements

- A bachelor's degree in education or in a discipline such as social science or business administration is required.
- A master's degree in education may be required.
- Specialized training or certification may be required.
- Several years of experience as a school teacher are usually required.

4167 Recreation, Sports and Fitness Program Supervisors and Consultants

This unit group includes those who oversee and administer recreation, sports and fitness programs and activities, provide consulting services, conduct research and develop programs and policies related to recreation, sports and physical fitness. They are employed by federal, provincial and municipal governments, recreation, sports, fitness and health care facilities, retirement homes, community centres, sports and fitness consulting firms and organizations, or they may be self-employed.

Example titles

camp co-ordinator
exercise physiologist
exercise therapist
fitness appraiser
fitness consultant
fitness supervisor

kinesiologist
recreation consultant
registered kinesiologist
sports consultant
sports policy analyst
sports program supervisor

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Kinesiologists conduct fitness and human movement tests and assessments. They design and implement programs to maintain, rehabilitate or enhance movement and performance in the areas of sports, recreation, work and exercise.
- Fitness consultants provide expert advice and consulting services to community groups, corporations, schools and other organizations in the design and development of fitness programs and activities. They may write proposals and press statements for corporations, industry and the fitness community.
- Recreation consultants provide expert advice and consulting service to communities, corporations, institutions and other organizations in the design and development of recreation programs and activities.
- Sports consultants provide expert advice and consulting service to sports associations and other organizations in the design, development and administration of sports programs and activities.
- Recreation, sports and fitness policy analysts conduct research and develop government policies related to recreation, sports, fitness and athletic safety and standards.
- Recreation, sports and fitness program supervisors develop, plan and co-ordinate sports, fitness and recreation programs, and special sporting events.
- Fitness appraisers conduct fitness tests and assessments, and design, develop and deliver fitness counselling.

- Exercise therapists conduct fitness tests and assessments, and design, develop and deliver rehabilitative exercise programs in occupational and related health settings.

Employment requirements

- A university degree in recreation administration, sports administration, physical education, kinesiology or related discipline combined with some work experience in a related field
 - orA college diploma in a recreation, sports or fitness program combined with some experience in a related field is usually required.
- Kinesiologists usually require a master's degree in kinesiology.
- Certification for kinesiologists is available through the Canadian Kinesiology Alliance.
- Recreation, sports and fitness program supervisors require experience as program leaders or instructors in recreation, sports and fitness. Certification in program specialization, such as fitness or lifesaving, may also be required.
- A Certified Fitness Appraiser certificate may be required for fitness consultants and appraisers.

Additional information

- Recreation, sports and fitness program supervisors may progress to recreation, sports and fitness management positions with experience.
- Mobility among recreation, sports and fitness consultants may be restricted within individual area of expertise.

4167 Recreation, Sports and Fitness Program Supervisors and Consultants

Classified elsewhere

- *Program Leaders and Instructors in Recreation, Sport and Fitness (5254)*
- *Recreation, Sports and Fitness Program and Service Directors (0513)*

4168 Program Officers Unique to Government

Program officers in this unit group are primarily concerned with the administration and operation of government institutions, such as Parliament, and activities unique to the operations of government, such as international relations, federal-provincial affairs, elections and tribunals.

Example titles

attaché	officer, royal commission
elections officer	officer, standing or select committee
federal-provincial relations officer	protocol officer
foreign service officer	returning officer
intergovernmental affairs officer	tribunal officer
officer, office of the Speaker	

Main duties

Program officers unique to government perform some or all of the following duties:

- Advise politicians or diplomats on the social, economic and political effects of government decisions on other governments in Canada or abroad
- Plan intergovernmental meetings and conferences with officers of other municipal, provincial or federal governments
- Co-ordinate the logistics and administration of elections within constituencies and ensure that electoral and voting procedures are followed
- Co-ordinate administrative support services for legislative committees, royal commissions or tribunals
- Participate as a member of a board or tribunal
- Plan logistics and oversee diplomatic protocol of official visits to Canada by foreign politicians and dignitaries
- Explain Canadian foreign and domestic policies to governments and nationals of foreign countries, and act on behalf of Canada abroad.

Employment requirements

- A bachelor's degree is usually required.
- A master's degree may be required.
- Several years of experience as a researcher, consultant or program administrator may be required.
- Foreign service officers are accepted on the basis of competitive examination.

Classified elsewhere

- *Administrative Officers* (1221)
- *Court Officers and Justices of the Peace* (1227)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Executive Assistants* (1222)
- *Immigration, Employment Insurance and Revenue Officers* (1228)
- *Social Policy Researchers, Consultants and Program Officers* (4164)

4169 Other Professional Occupations in Social Science, n.e.c.

This unit group includes anthropologists, archaeologists, geographers, historians, linguists, political scientists, sociologists and other professional occupations in social science not elsewhere classified. They are employed in universities and throughout the public and private sectors.

Example titles

anthropologist
archaeologist
geographer
gerontologist
historian

linguist
political scientist
psychometrician
psychometrist
sociologist

Main duties

The following is a summary of main duties for some occupations in this group:

- Anthropologists conduct studies of the origin, development and functioning of human societies and cultures and of human evolution, changing physical characteristics and geographical distribution.
- Archaeologists study artifacts (objects and structures) to reconstruct past economic, social, political and intellectual life.
- Geographers study and analyse the spatial distribution and interrelationship of physical, biological, cultural and social patterns.
- Historians conduct research into one or more phases or aspects of past human activity and interpret and document findings.
- Linguists study the origin, structure and development of languages and apply linguistic theory to problems in teaching, translation and communications.
- Political scientists conduct research into the theory, origin, development, interrelationships and functioning of political institutions, political movements and individual political behaviour.
- Psychometricians develop psychological tests, scales and measures, and may administer or apply and interpret such tests, scales and measures. Psychometrists administer and score psychological tests, usually under the supervision of a registered psychologist.
- Sociologists study the development, structure, social patterns and interrelationships of human society.

- Other social science professionals included in this group specialize in particular areas of social sciences and humanities disciplines. These include criminologists (specialists in the study of crime and criminals), gerontologists (specialists in the phenomena and problems of ageing), graphoanalysts (specialists in handwriting analysis), and others.

Specialization usually exists within each of these occupations.

Employment requirements

- A master's or doctorate degree in the discipline is usually required.

Additional information

- Specialization within each occupation occurs through specialized university study or through experience.

Classified elsewhere

- *College and Other Vocational Instructors* (4131)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Mathematicians, Statisticians and Actuaries* (2161)
- *Psychologists* (4151)
- *Secondary School Teachers* (4141)
- *Social Policy Researchers, Consultants and Program Officers* (4164)
- *University Professors* (4121)

4211 Paralegal and Related Occupations

Legal assistants and paralegals prepare legal documents, maintain records and files and conduct research to assist lawyers or other professionals. Notaries public administer oaths, take affidavits, sign legal documents and perform other activities according to the limitations of their appointment. Trademark agents advise clients on intellectual property matters. Independent paralegals provide legal services to the public as allowed by government legislation, or provide paralegal services on contract to law firms or other establishments. Legal assistants and paralegals are employed by law firms, by record search companies and in legal departments throughout the public and private sectors. Independent paralegals are usually self-employed. Trademark agents are employed by law firms and legal departments throughout the public and private sectors, trademark development and search firms or they may be self-employed. Notaries public are employed by government and in the public and private sectors or they may be self-employed.

Example titles

commercial law clerk
corporate paralegal
family law paralegal
independent paralegal
land titles examiner
law clerk
legal assistant

legal researcher
litigation legal assistant
notary public
paralegal
real estate law clerk
title searcher
trademark agent

Main duties

Legal assistants and paralegals in law firms or in other establishments perform some or all of the following duties:

- Assist lawyers by interviewing clients, witnesses and other related parties, assembling documentary evidence, preparing trial briefs, and arranging for trials
- Prepare wills, real estate transactions and other legal documents, court reports and affidavits
- Research records, court files and other legal documents
- Draft legal correspondence and perform general office and clerical duties.

Notaries public perform some or all of the following duties:

- Administer oaths and take affidavits and depositions
- Witness and certify the validity of signatures on documents
- May draft contracts, prepare promissory notes and draw up wills, mortgages and other legal documents
- May arrange probates and administer the estates of deceased persons.

Trademark agents perform some or all of the following duties:

- Advise clients on intellectual property matters and represent clients before the Registrar of Trade-Marks on matters including prosecution of applications for registration of trademarks
- Advise on the registrability of trademarks, trademark licensing requirements, transfer of intellectual property and protection of existing trademark rights
- Represent clients at proceedings before the Trade Marks Opposition Board and in related proceedings
- May represent clients internationally in consultation with foreign associates and attorneys.

Independent paralegals perform some or all of the following duties:

- Represent clients in small claims court and in other lower court proceedings, at tribunals and before administrative bodies
- Advise clients and take legal action on landlord and tenant matters, traffic violations, name changes and other issues within their jurisdictions.

4211 Paralegal and Related Occupations

Employment requirements

- Legal assistants and paralegals in law firms require a bachelor's degree in law or a college diploma in a legal assistant or law clerk program
or
In-house training from a law firm or other legal establishment.
- Independent paralegals require knowledge of legal principles and procedures usually obtained through industry-sponsored courses and through experience, or on completion of a community college paralegal program.
- Notaries public are appointed after examination and certification of their qualifications by the governing judiciary in their province or territory. All appointments have specific limitations on the activities they can perform and for specific periods of time.
- Notaries public require a provincial licence. In British Columbia, membership in the Society of Notaries Public is also required.
- To be licensed, trademark agents are required to work in the area of trademark law, including the preparation and prosecution of trademark applications for registration, for two years
and
To complete successfully the examination conducted jointly by the Intellectual Property Institute of Canada and the Registrar of Trade-Marks, Canadian Intellectual Property Office
or
Either one of the above and to be a lawyer entitled to practise in Canada.
- Trademark agents require registration with the federal Trade-Mark Office.

Additional information

- Notaries public usually receive in-house training and perform their duties in rural or remote areas or in the business offices in which they are employed.

Classified elsewhere

- Articling students, Quebec notaries and trademark lawyers (in 4112 *Lawyers and Quebec Notaries*)
- *Legal Secretaries* (1242)
- Patent agents (in 4161 *Natural and Applied Science Policy Researchers, Consultants and Program Officers*)

4212 Community and Social Service Workers

Community and social service workers administer and implement a variety of social assistance programs and community services, and assist clients to deal with personal and social problems. They are employed by social service and government agencies, mental health agencies, group homes, school boards, correctional facilities and other establishments.

Example titles

Aboriginal outreach worker	group home worker
addictions worker	income maintenance officer – social services
behavioural aide	life skills instructor
child and youth worker	mental health worker
community development worker	rehabilitation worker – social services
community service worker	social services worker
crisis intervention worker	veteran services officer
developmental service worker	welfare and compensation officer
drop-in centre worker	women's shelter supervisor
family service worker	youth worker
financial assistance worker	

Main duties

Community and social service workers perform some or all of the following duties:

- Interview clients to obtain case history and background information
- Assess clients' relevant skill strengths and deficits
- Assist clients to sort out options and develop plans of action while providing necessary support and assistance
- Assist clients in locating and utilizing community resources including legal, medical and financial assistance, housing, employment, transportation, assistance with moves, day care and other referral services
- Prepare intake reports
- Counsel clients living in group homes and half-way houses, supervise their activities and assist in pre-release and release planning
- Participate in the selection and admission of clients to appropriate programs
- Assess and investigate eligibility for social benefits
- Meet with clients to assess their progress, give support and discuss any difficulties or problems
- Refer clients to other social services
- Advise and aid recipients of social assistance and pensions
- Provide crisis intervention and emergency shelter services

- Implement and organize the delivery of specific services within the community
- Implement life skills workshops, substance abuse treatment programs, behaviour management programs, youth services programs and other community and social service programs under the supervision of social services or health care professionals
- Assist in evaluating the effectiveness of treatment programs by tracking clients' behavioural changes and responses to interventions
- Maintain contact with other social service agencies and health care providers involved with clients to provide information and obtain feedback on clients' overall progress
- Co-ordinate the volunteer activities of human service agencies, health care facilities and arts and sports organizations
- Maintain program statistics for purposes of evaluation and research.
- May supervise social service support workers and volunteers.

Employment requirements

- Completion of a college or university program in social work, child and youth care, counselling or other social science or health-related discipline is usually required.

4212 Community and Social Service Workers

- Previous work experience in a social service environment as a volunteer or in a support capacity may replace formal education requirements for some occupations in this unit group.
- Social service workers may be required to be a member of a provincial regulatory body in some provinces.

Additional information

- Progression to professional occupations in social services, such as family and marriage counsellors, social workers, and probation and parole officers, is possible with additional training and experience.

Classified elsewhere

- *Educational Counsellors* (4143)
- *Employment Counsellors* (4213)
- *Family, Marriage and Other Related Counsellors* (4153)
- *Managers in Social, Community and Correctional Services* (0314)
- *Probation and Parole Officers and Related Occupations* (4155)
- *Program Leaders and Instructors in Recreation, Sport and Fitness* (5254)
- *Social Workers* (4152)

4213 Employment Counsellors

Employment counsellors provide assistance, counsel and information to worker clients on all aspects of employment search and career planning. They also provide counsel and information to employer clients regarding human resource and employment issues. Employment counsellors are employed primarily by federal and provincial governments but are also employed by large establishments and private employment service agencies. Supervisors of employment counsellors are included in this unit group.

Example titles

career counsellor – except education
career development consultant
career development counsellor
employment counsellor
occupational counsellor

outplacement counsellor
relocation consultant
relocation counsellor
supervisor, employment counsellors
vocational counsellor

Main duties

Employment counsellors perform some or all of the following duties:

- Interview clients to obtain employment history, educational background and career goals
- Identify barriers to employment and assist clients with such matters as job readiness skills, job search strategies, writing résumés and preparing for job interviews
- Advise employers on human resource and other employment-related issues
- Administer and interpret tests designed to determine the interests, aptitudes and abilities of clients
- Assess need for assistance such as rehabilitation, financial aid or further vocational training and refer clients to the appropriate services
- Provide established workers with information on maintaining a job or moving within an organization, dealing with job dissatisfaction or making a mid-career change
- Collect labour market information for clients regarding job openings, entry and skill requirements and other occupational information
- Provide consulting services to community groups and agencies, business and industry, and to other organizations involved in providing community-based career planning resources.

- Completion of secondary school and several years of experience in services related to counselling or in a helping profession may replace formal education.

Additional information

- Progression to supervisory positions is possible through experience.
- Mobility to positions in personnel or training is possible.

Classified elsewhere

- *Educational Counsellors* (4143)
- Employment insurance officers (in 1228 *Immigration, Employment Insurance and Revenue Officers*)
- *Personnel and Recruitment Officers* (1223)
- Vocational rehabilitation counsellors (in 4153 *Family, Marriage and Other Related Counsellors*)

Employment requirements

- A bachelor's degree or college diploma in a related field, such as psychology, social services or education, is usually required.

4214 Early Childhood Educators and Assistants

Early childhood educators plan and organize activities for preschool and school-age children. Early childhood educator assistants provide care and guidance to preschool children under the supervision of early childhood educators. Early childhood educators and assistants lead children in activities to stimulate and develop their intellectual, physical and emotional growth. They are employed in child-care centres, kindergartens, nursery schools, agencies for exceptional children, and other environments where early childhood education services are provided, or they may be self-employed. Early childhood educators who are supervisors are included in this group.

Example titles

child-care worker assistant
child-care worker, day care
day-care helper
day-care supervisor
day-care worker
early childhood assistant
early childhood education worker

early childhood educator
early childhood educator assistant
early childhood program staff assistant
early childhood supervisor
preschool helper
preschool supervisor
preschool teacher

Main duties

Early childhood educators perform some or all of the following duties:

- Develop and implement daily activities that support and promote the development of children
- Lead children in activities by telling or reading stories, teaching songs, demonstrating the use of simple musical instruments, preparing craft materials and demonstrating their use, providing opportunities for creative expression through the media of art, dramatic play, music and physical fitness, and taking the children to local points of interest
- Guide and assist children in the development of proper eating, dressing and toilet habits
- Observe children for signs of learning disabilities or emotional problems and take appropriate action
- Assess the skills, abilities, interests and needs of children
- Discuss progress or problems of children with parents and other staff members
- Establish and maintain collaborative relationships with other community service providers working with children
- Attend meetings and workshops to develop and discuss new teaching methods
- May plan and organize activities for school-age children in child-care programs before and after regular school hours

- May supervise and co-ordinate the activities of other early childhood educators and early childhood educator assistants.

Early childhood educator assistants perform some or all of the following duties:

- Conduct and monitor activity programs designed for young children
- Lead children in activities by telling stories, teaching songs and preparing craft materials
- Prepare and serve snacks
- Arrange rooms and furniture for lunch and rest periods
- Assist with proper eating, dressing and toilet habits
- Submit written observations on children to supervisor
- Attend staff meetings to discuss progress and problems of children
- Assist supervisor in keeping records
- Maintain day-care equipment and assist in housekeeping duties.

Employment requirements

Early childhood educators

- A bachelor's degree or college diploma in early childhood education is required.
- Progression to senior positions, such as day-care supervisor, is possible with experience.

Early childhood educator assistants

- Completion of secondary school is usually required.

4214 Early Childhood Educators and Assistants

- Experience in child care, such as babysitting, is required.
- Completion of an early childhood education assistant certificate program may be required.

Classified elsewhere

- *Elementary School and Kindergarten Teachers* (4142)
- Teacher aides (in 6472 *Elementary and Secondary School Teacher Assistants*)

4215 Instructors and Teachers of Persons with Disabilities

Instructors and teachers of persons with disabilities teach children and adults with physical and developmental disabilities communication techniques, such as Braille or sign language, and rehabilitation skills to increase independence and mobility. They are employed in rehabilitation centres, specialized educational institutes and throughout the elementary and secondary school system.

Example titles

instructor, orientation and mobility
job coach for persons with disabilities
rehabilitation instructor
sign language instructor
teacher of Braille

teacher of persons who are blind
teacher of persons who are hearing impaired
teacher of persons who are intellectually impaired
teacher of persons with a physical disability
teacher, rehabilitation

Main duties

Instructors and teachers of persons with disabilities perform some or all of the following duties:

- Instruct students who are blind or visually impaired in reading and writing Braille and in the use of special equipment
- Instruct students who are deaf or hearing impaired in lip-reading, finger spelling and sign language, according to individual communication needs
- Instruct students who are hearing impaired in formation and development of sounds for speech using hearing aids and other devices
- Instruct individuals with physical disabilities and their families in the use of rehabilitative techniques, prosthetic devices, wheelchairs and other equipment designed to minimize the effects of a disability
- Assist individuals with intellectual impairments and physical disabilities to develop life skills, and provide job training and support.

Employment requirements

- A bachelor's degree in education, special education, or a related field such as psychology or social work, is usually required.
- Completion of an appropriate training program in rehabilitation or special education is required.
- Teachers who work in a public school system require a provincial teaching certificate.

Classified elsewhere

- *Early Childhood Educators and Assistants* (4214)
- *Elementary and Secondary School Teacher Assistants* (6472)
- *Elementary School and Kindergarten Teachers* (4142)
- *Secondary School Teachers* (4141)

4216 Other Instructors

Instructors in this unit group teach courses, such as motor vehicle or motorcycle driving, sewing or other courses, which are outside of educational institutions and not job-related. They are employed by driving schools, fabric retailers and other commercial establishments or they may be self-employed. This unit group also includes driver's licence examiners, who are employed by provincial governments, and tutors who provide instruction in elementary or secondary school subjects.

Example titles

driver's licence examiner
driving instructor
instructor, modelling and finishing school

motorcycle driving instructor
sewing instructor – non-vocational

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Driving instructors instruct individuals on proper motor vehicle driving skills and traffic regulations, demonstrate and explain the handling and mechanical operation of motor vehicles and supervise individuals during practice driving.
- Driver's licence examiners conduct road test examinations and evaluate the driving ability of applicants for driver's licences.
- Sewing instructors give instruction to students in techniques and skills of sewing, tailoring and dressmaking.
- Modelling and finishing school instructors give instruction on comportment, personal development, make-up application and modelling techniques for fashion shows and magazine advertising.

Employment requirements

- Expertise in the field of instruction must be demonstrated.
- Driving instructors must obtain special licensing as a driving instructor in the province of employment.

Classified elsewhere

- *College and Other Vocational Instructors* (4131)
- *Elementary School and Kindergarten Teachers* (4142)
- *Secondary School Teachers* (4141)

4217 Other Religious Occupations

This unit group includes brothers, nuns, monks, religious education workers and others who provide support to ministers of religion or to a religious community and who perform certain functions associated with the practice of a religion. They may perform these duties in churches, synagogues, temples or other places of worship or in institutions such as schools, hospitals and prisons.

Example titles

cantor	monk
Christian science practitioner	nun
deacon	religious education worker
mohel	Salvation Army field worker

Main duties

Religious workers in this unit group perform some or all of the following duties:

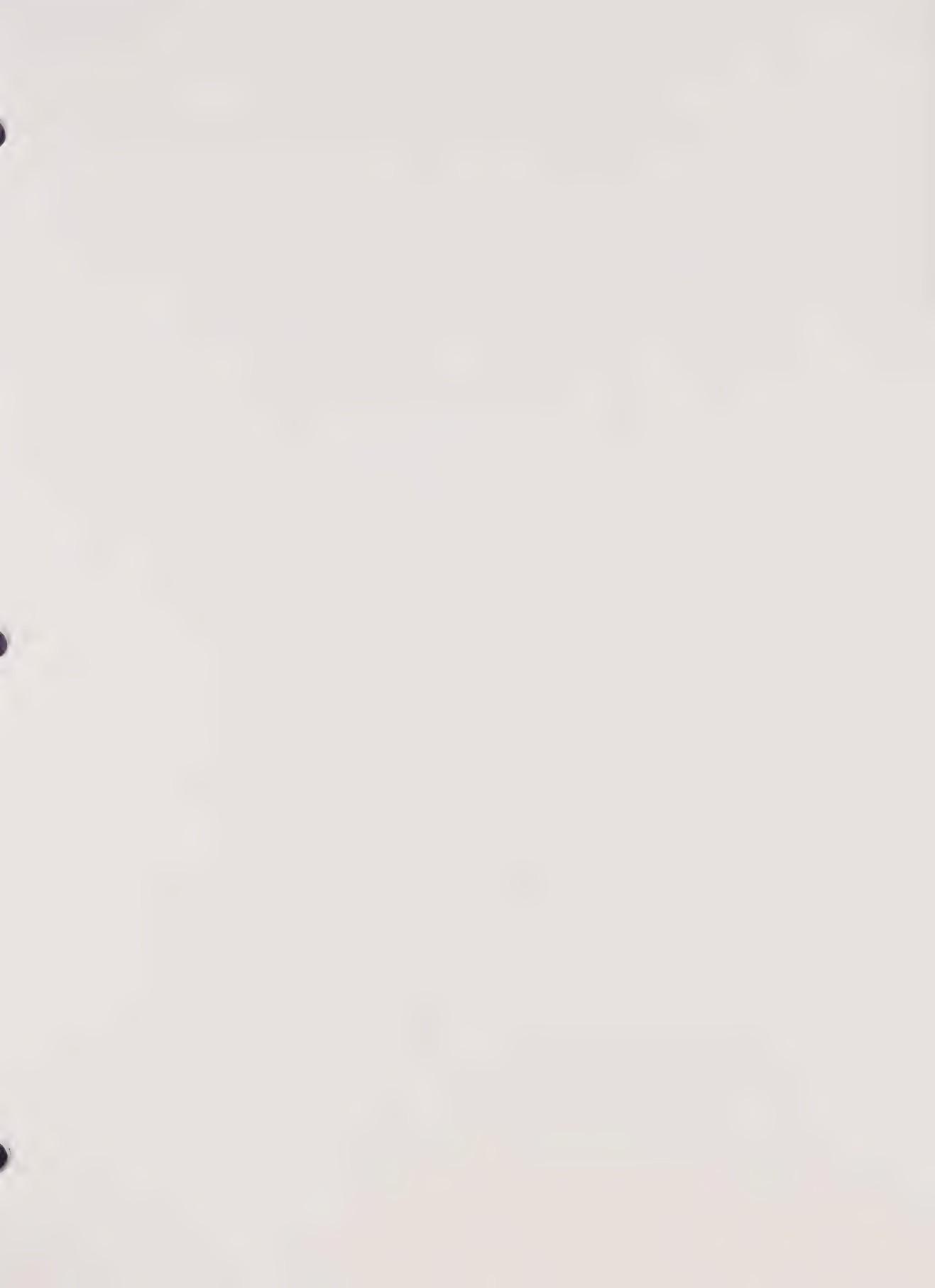
- Assist at services of public worship and religious rites
- Provide religious education, spiritual guidance and moral support to members of a religious community
- Administer programs providing food, clothing and shelter.

Classified elsewhere

- *Ministers of Religion (4154)*

Employment requirements

- Requirements range from completion of secondary school education to a university undergraduate degree, depending on the particular occupation and religion.
- There may be other admittance requirements depending on the particular occupation and religion.



OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT

Major Group 51

PROFESSIONAL OCCUPATIONS IN ART AND CULTURE

511 Librarians, Archivists, Conservators and Curators

- 5111 Librarians
- 5112 Conservators and Curators
- 5113 Archivists

512 Writing, Translating and Public Relations Professionals

- 5121 Authors and Writers
- 5122 Editors
- 5123 Journalists
- 5124 Professional Occupations in Public Relations and Communications
- 5125 Translators, Terminologists and Interpreters

513 Creative and Performing Artists

- 5131 Producers, Directors, Choreographers and Related Occupations
- 5132 Conductors, Composers and Arrangers
- 5133 Musicians and Singers
- 5134 Dancers
- 5135 Actors and Comedians
- 5136 Painters, Sculptors and Other Visual Artists

Major Group 52

TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT

521 Technical Occupations in Libraries, Archives, Museums and Art Galleries

- 5211 Library and Archive Technicians and Assistants
- 5212 Technical Occupations Related to Museums and Art Galleries

522 Photographers, Graphic Arts Technicians and Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts

- 5221 Photographers
- 5222 Film and Video Camera Operators
- 5223 Graphic Arts Technicians
- 5224 Broadcast Technicians
- 5225 Audio and Video Recording Technicians
- 5226 Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts
- 5227 Support Occupations in Motion Pictures, Broadcasting and the Performing Arts

523 Announcers and Other Performers

- 5231 Announcers and Other Broadcasters
- 5232 Other Performers

524 Creative Designers and Craftspersons

- 5241 Graphic Designers and Illustrators
- 5242 Interior Designers
- 5243 Theatre, Fashion, Exhibit and Other Creative Designers
- 5244 Artisans and Craftspersons
- 5245 Patternmakers - Textile, Leather and Fur Products

525 Athletes, Coaches, Referees and Related Occupations

- 5251 Athletes
- 5252 Coaches
- 5253 Sports Officials and Referees
- 5254 Program Leaders and Instructors in Recreation, Sport and Fitness

5111 Librarians

Librarians select, develop, organize and maintain library collections and provide advisory services for users. They are employed in libraries or in a department within a library.

Example titles

bibliographer
cataloguer – library
cybrarian

librarian
library consultant
library supervisor

Main duties

Librarians perform some or all of the following duties:

- Recommend acquisition of books, periodicals and audio-visual, interactive media and other materials for inclusion in library collection
- Provide reference services
- Select, classify, catalogue and weed library materials
- Prepare bibliographies, indexes, reading lists, guides and other finding aids
- Develop systems to access library collections
- Perform manual, on-line and interactive media reference searches, make interlibrary loans and perform other functions using Internet and CD-ROM, to assist users in accessing library materials
- Provide specialized programs for children, seniors and other groups
- Conduct library information and orientation training programs and tours
- Perform related administrative duties and supervise library technicians, assistants and clerks.

Employment requirements

- A master's degree in library science is required.

Additional information

- Progression to library management positions is possible with experience.

Classified elsewhere

- Library directors (in 0511 *Library, Archive, Museum and Art Gallery Managers*)
- Medical record clerks (in 1413 *Records Management and Filing Clerks* and 4142 *Elementary School and Kindergarten Teachers*)
- School librarians (in 4141 *Secondary School Teachers*)

5112 Conservators and Curators

Conservators restore and conserve artifacts belonging to museums, galleries and owners of cultural property. Curators recommend the acquisition of museum and gallery artifacts and research their artistic history. Conservators and curators are employed in museums, art galleries and universities. Conservators may be self-employed.

Example titles

assistant curator
conservator

conservator – art objects
curator

Main duties

Conservators perform some or all of the following duties:

- Examine artifacts, determine their condition, suggest methods for treating them and recommend preventive conservation techniques to their owners
- Restore and conserve paintings, photographs, sculptures, furniture, pottery and other museum and art gallery artifacts
- Provide advice on display and storage of museum and gallery artifacts to ensure proper maintenance and preservation
- Research new conservation and restoration techniques
- Provide consultation to museums, art galleries or private individuals
- Supervise conservation technicians and other museum technicians.

Curators perform some or all of the following duties:

- Recommend the acquisition of paintings, photographs, sculptures, documents and other museum and art gallery artifacts
- Research origins and artistic history of artifacts
- Develop storylines and themes and organize displays and exhibitions
- Co-ordinate the storage of collections and setting-up of displays and exhibitions
- Oversee the conservation, display and circulation of collections
- Supervise curatorial assistants and other museum technicians.

Conservators and curators may specialize in a particular type of collection or material, such as furniture, weapons, books, paintings and musical instruments.

Employment requirements

- Conservators require a master's degree in art conservation
 - or
 - Completion of a three-year college program in conservation technology and several years of experience in conservation work.
- Curators require a master's or bachelor's degree in museology, art history or a field related to their specific area of work.

Additional information

- Progression to museum or art gallery management positions is possible with experience.

Classified elsewhere

- Curatorial assistants (in 5212 *Technical Occupations Related to Museums and Art Galleries*)
- Museum designers (in 5243 *Theatre, Fashion, Exhibit and Other Creative Designers*)
- Museum educators (in 5124 *Professional Occupations in Public Relations and Communications*)

5113 Archivists

Archivists manage, process, store and disseminate information contained in an organization's archives. They acquire, store and research textual material, pictures, maps, architectural documents, electronic materials, films and videos, sound recordings and multimedia materials. Archivists are employed in archives, in the public and para-public sectors and in private sector organizations.

Example titles

archivist

historical archivist

multimedia archivist

Main duties

Archivists perform some or all of the following duties:

- Develop policies and procedures for managing current and semicurrent archives, in particular corporate cataloguing systems, records scheduling and disposal, and finding aids
- Design programs for managing, disseminating and storing archives of all types (documents, photographs, maps, audio-visual materials, manuscripts, etc.)
- Plan the computerized management of archives and the management of electronic archives
- Appraise and acquire archival materials to build and develop an archival collection for research purposes
- Authenticate documents and records and research the origins and significance of archival materials
- Organize noncurrent archives and develop cataloguing and retrieval systems to allow access to archival materials
- Assist people with their searches.

Additional information

- Progression to archive management positions is possible with experience.

Classified elsewhere

- Archive assistants (in 5211 *Library and Archive Technicians and Assistants*)
- *Librarians* (5111)
- *Library, Archive, Museum and Art Gallery Managers* (0511)

Employment requirements

- A bachelor's degree minor in archival studies
or
A university degree with a certificate in archival studies is required.
- A master's degree in archival studies, archival studies and information science, library science or history may be required.

5121 Authors and Writers

Authors and writers plan, research and write books, scripts, storyboards, plays, essays, speeches, manuals, specifications and other non-journalistic articles for publication or presentation. They are employed by advertising agencies, governments, large corporations, private consulting firms, publishing firms, multimedia/new-media companies and other establishments, or they may be self-employed.

Example titles

advertising copywriter

copywriter

essayist

interactive media writer

novelist

playwright

poet

scientific writer

script writer

specifications writer

speech writer

technical writer

writer

Main duties

The following is a summary of the main duties of some occupations in this unit group:

- Novelists, playwrights, script writers, poets and other creative writers conceive and write novels, plays, scripts, poetry and other material for publication or presentation and may conduct research to establish factual content and to obtain other necessary information.
- Technical writers analyze material, such as specifications, notes and drawings, and write manuals, user guides and other documents to explain clearly and concisely the installation, operation and maintenance of software and electronic, mechanical and other equipment.
- Copywriters study and determine selling features of products and services and write text for advertisements and commercials.

Authors and writers may specialize in a particular subject or type of writing.

Employment requirements

- Technical writers usually require a university degree in the area of specialization, such as computer science or engineering.
- Copywriters usually require a university degree or college diploma in French, English, marketing, advertising or another discipline.
- Creative writing programs are offered by universities and colleges.
- Talent and ability, as demonstrated by a portfolio of work, are important hiring criteria.
- Membership in a guild or union related to the occupation may be required.

Classified elsewhere

- *Editors* (5122)
- *Journalists* (5123)
- *Professional Occupations in Public Relations and Communications* (5124)
- Song writers (in 5132 *Conductors, Composers and Arrangers*)
- *Translators, Terminologists and Interpreters* (5125)

5122 Editors

Editors review, evaluate and edit manuscripts, articles, news reports and other material for publication, broadcast or interactive media and co-ordinate the activities of writers, journalists and other staff. They are employed by publishing firms, magazines, journals, newspapers, radio and television networks and stations, and by companies and government departments that produce publications such as newsletters, handbooks, manuals and Web sites. Editors may also work on a freelance basis.

Example titles

advertising editor
associate editor
contributing editor
copy editor
editor
editorial consultant

literary editor
manuscript editor
news editor
news service editor
sports editor
technical editor

Main duties

Editors perform some or all of the following duties:

- Evaluate suitability of manuscripts, articles, news copy and wire service dispatches for publication, broadcast or electronic media and recommend or make changes in content, style and organization
- Read and edit copy to be published or broadcast to detect and correct errors in spelling, grammar and syntax, and shorten or lengthen copy as space or time requires
- Confer with authors, staff writers, reporters and others regarding revisions to copy
- Plan and implement layout or format of copy according to space or time allocations and significance of copy
- Plan and co-ordinate activities of staff and assure production deadlines are met
- Plan coverage of upcoming events and assign work accordingly
- Write or prepare introductions, marketing and promotional materials, biographical notes, indexes and other text
- May negotiate royalties with authors and arrange for payment of freelance staff.

Editors may specialize in a particular subject area, such as news, sports or features, or in a particular type of publication, such as books, magazines, newspapers or manuals.

Employment requirements

- A bachelor's degree in English, French, journalism or a related discipline is usually required.

- Several years of experience in journalism, writing, publishing or a related field are usually required.

- Membership in the Editors Association of Canada may be required.

Additional information

- Progression to supervisory and management positions, such as editor-in-chief or managing editor, is possible with experience.

Classified elsewhere

- *Authors and Writers (5121)*
- *Editorial assistants (in 1452 Correspondence, Publication and Related Clerks)*
- *Film editors (in 5131 Producers, Directors, Choreographers and Related Occupations)*
- *Journalists (5123)*
- *Managing editors (in 0512 Managers – Publishing, Motion Pictures, Broadcasting and Performing Arts)*
- *Map editors (in 2255 Mapping and Related Technologists and Technicians)*
- *Sound editors (in 5225 Audio and Video Recording Technicians)*
- *Translators-revisers (in 5125 Translators, Terminologists and Interpreters)*

5123 Journalists

Journalists research, investigate, interpret and communicate news and public affairs through newspapers, television, radio and other media. Journalists are employed by radio and television networks and stations, newspapers and magazines. Journalists may also work on a freelance basis.

Example titles

book reviewer	journalist
broadcast journalist	network reporter
columnist	news commentator
correspondent	newspaper critic
cyberjournalist	reporter
investigative reporter	television news anchorperson

Main duties

Journalists perform some or all of the following duties:

- Collect local, national and international news through interviews, investigation and observation
- Write news stories for publication and broadcast
- Receive, analyze and verify news and other copy for accuracy
- Arrange for and conduct interviews as part of research and for radio and television programs
- Research and report on developments in specialized fields such as medicine, science and technology
- Prepare regular feature columns and stories on specialized topics
- Write editorials and commentaries on topics of current interest to stimulate public interest and express the views of a publication or broadcasting station
- Write critical reviews of literary, musical and other artistic works based on knowledge, judgement and experience.

Journalists may specialize in print, broadcast or Webcast media, in particular issues such as political affairs or entertainment news, or in a particular geographic area.

Employment requirements

- A university degree or college diploma in journalism or a related field such as communications is usually required.
- Experienced reporters may advance to editorial positions (print media) or become producers (broadcast media).

Classified elsewhere

- *Announcers and Other Broadcasters* (5231)
- *Authors and Writers* (5121)
- *Editors* (5122)
- Photojournalists (in 5221 *Photographers*)

5124 Professional Occupations in Public Relations and Communications

This unit group includes specialists in public relations and communications who develop and implement communication and promotion strategies and information programs, publicize activities and events, and maintain media relations on behalf of businesses, governments and other organizations, and for performers, athletes, writers and other talented individuals. They are employed by consulting firms, corporations, associations, government, social agencies, museums, galleries, public interest groups, and cultural and other organizations, or they may be self-employed. Agents such as entertainment, literary and sports agents are included in this unit group.

Example titles

communications officer
communications specialist
fundraising consultant
information officer
literary agent
media co-ordinator
media relations officer
museum educator

performers agent
press secretary
public affairs officer
publicist
publicity agent
public relations consultant
public relations officer

Main duties

Specialists in public relations and communications perform some or all of the following duties:

- Develop, implement and evaluate communications strategies and programs designed to inform clients, employees and the general public of initiatives and policies of businesses, governments and other organizations
- Gather, research and prepare communications material for internal and external audiences
- Conduct public opinion and attitude surveys to identify the interests and concerns of key groups served by their organization
- Prepare or oversee preparation of reports, briefs, bibliographies, speeches, presentations, Web sites and press releases
- Develop and organize workshops, meetings, ceremonies and other events for publicity, fundraising and information purposes
- Prepare and deliver educational and publicity programs and informational materials to increase awareness of museums, galleries and other tourist attractions
- Initiate and maintain contact with the media
- Arrange interviews and news conferences
- Act as spokesperson for an organization and answer written and oral inquiries
- Co-ordinate special publicity events and promotions for internal and external audiences
- Assist in the preparation of brochures, reports, newsletters and other material

- Represent and act as an agent for talented individuals or individuals with specific occupational expertise
- Prepare or oversee preparation of sports, literary, performance or other contracts.

Literary agents specialize in representing specific types of authors and writers. Performance agents specialize in representing specific singers, musicians, actors or other performers. Sports agents specialize in representing specific athletes or sports teams.

Employment requirements

- A university degree or college diploma in public relations, communications, journalism, museology or a discipline related to a particular subject matter is usually required.
- Practitioner in public relations may require an APR (Accredited in Public Relations) designation.

Additional information

- Progression to managerial positions in public relations, communications and fundraising is possible with additional training and experience.

5124 Professional Occupations in Public Relations and Communications

Classified elsewhere

- Advertising specialists (in 1122 *Professional Occupations in Business Services to Management*)
- Authors and Writers (5121)
- Conference and Event Planners (1226)
- Marketing consultants (in 4163 *Business Development Officers and Marketing Researchers and Consultants*)
- Public relations clerks (in 1453 *Customer Service, Information and Related Clerks*)
- Public relations managers (in 0611 *Sales, Marketing and Advertising Managers*)

5125 Translators, Terminologists and Interpreters

Translators translate written material from one language to another. Interpreters translate oral communication from one language to another during speeches, meetings, conferences, debates and conversation, or in court or before administrative tribunals. Terminologists conduct research to itemize terms connected with a certain field, define them and find equivalents in another language. Sign language interpreters use sign language to translate spoken language and vice versa during meetings, conversations, television programs or in other instances. Translators, terminologists and interpreters are employed by government, private translation and interpretation agencies, in-house translation services, large private corporations, international organizations and the media, or they may be self-employed. Sign language interpreters work in schools and courts, and for social service agencies, interpretation services, government services and television stations, or they may be self-employed.

Example titles

community interpreter
conference interpreter
court interpreter
interpreter
legal terminologist
literary translator
localiser

medical terminologist
sign language interpreter
terminologist
translator
translator adaptor
translator-reviser

Main duties

Translators and translator-revisers perform some or all of the following duties:

- Translate a variety of written material such as correspondence, reports, legal documents, technical specifications and textbooks from one language to another, maintaining the content, context and style of the original material to the greatest extent possible
 - Localize software and accompanying technical documents to adapt them to another language and culture
 - Revise and correct translated material
 - May train and supervise other translators.
- Terminologists perform some or all of the following duties:
- Identify the terminology used in a field of activity
 - Conduct terminological research on a given subject or in response to inquiries for the preparation of glossaries, terminology banks, technological files, dictionaries, lexicons and resource centres, and add to terminological databases
 - Manage, update and circulate linguistic information collected from terminological databases

- Provide consultative services to translators, interpreters and technical writers preparing legal, scientific or other documents requiring specialized terminologies.

Interpreters perform some or all of the following duties:

- Interpret oral communication from one language to another aloud or using electronic equipment, either simultaneously (as the speaker speaks), consecutively (after the speaker speaks) or whispered (speaking in a low whisper to one or two persons as the speaker is talking)
- Provide interpretation services in court or before administrative tribunals
- May interpret language for individuals and small groups travelling in Canada and abroad
- May interpret for persons speaking a Native or foreign language in a variety of circumstances
- May train other interpreters.

Translators, terminologists and interpreters specialize in two languages, such as French and English, the official languages of Canada. They may also specialize in another language and one of the official languages. The main areas of specialization include administrative, literary, scientific and technical translation. Interpreters may specialize in court, parliamentary or conference interpretation.

5125 Translators, Terminologists and Interpreters

Sign language interpreters perform some or all of the following duties:

- Translate sign language to a spoken language and vice versa either simultaneously or consecutively.

Sign language interpreters work in French and Langue des signes québécoise (LSQ) or in English and American Sign Language (ASL).

Employment requirements

- A university degree in translation with a specialization in translation, interpretation or terminology in two languages including at least one of the two official languages
 - or*
 - A university degree in a related discipline such as languages, linguistics, philology and courses in linguistic transfer and two years' experience as a full-time translator working in two languages, at least one of which is an official language
 - or*
 - Five years of experience as a full-time translator working in two languages, at least one of which is an official language, are required.
- Sign language interpreters require a college training program or a university certificate in sign language interpretation.
- Certification on dossier or by examination from the Canadian Translators, Terminologists and Interpreters Council may be required for translators, terminologists and interpreters.
- Sign language interpreters may require a certificate or certification evaluation in LSQ or ASL.
- Fluency in three languages is usually required for translators or interpreters working in an international context.
- Membership in a provincial or territorial association of translators, interpreters and terminologists may be required.
- Membership in a provincial association of sign language interpreters may be required.

Classified elsewhere

- *Authors and Writers (5121)*
- *Editors (5122)*
- Language instructors (in 4131 College and Other Vocational Instructors)
- Linguists (in 4169 Other Professional Occupations in Social Science, n.e.c.)

5131 Producers, Directors, Choreographers and Related Occupations

This unit group includes producers, directors, choreographers and others who oversee and control the technical and artistic aspects of film, television, radio, dance and theatre productions. They are employed by film production companies, radio and television stations, broadcast departments, advertising companies, sound recording studios, record production companies and dance companies. They may also be self-employed.

Example titles

artistic director – motion picture
choreographer
cyber-choreographer
director – motion picture
director of photography
film editor
filmmaker
multimedia audio producer

producer-director
producer – performing arts
radio producer
record producer
stage director – performing arts
technical director – broadcasting
television producer

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Film, radio and television producers plan, organize and control the various stages and scheduling involved in the production of presentations, motion pictures, television shows and radio programs; engage directors and other production personnel and supervise all technical personnel, and determine the treatment, scope and scheduling of production; maintain production archives and negotiate royalties.
- Directors interpret scripts and direct the mise-en-scène; select and direct the actors, extras and technical crew; advise the cast and crew on the interpretation and delivery of the performance; direct rehearsals, filmings, broadcasts and performances; and confer with crew and specialists throughout production and post-production to achieve desired presentation.
- Choreographers create dances for film, theatre and television performances that convey stories, ideas and moods, and direct rehearsals for dancers to achieve desired interpretation.
- Art directors plan, organize and direct the artistic aspects of motion pictures, stage productions and television shows by overseeing the design of sets, costumes, furnishings and props to create portrayals of period and setting.
- Film editors edit motion picture film and arrange film segments into sequences to achieve continuity and desired dramatic, comedic and thematic effects.

- Record producers plan and co-ordinate the production of musical recordings, direct musicians and singers during rehearsals and recordings and manage technicians involved in duplicating, dubbing and mastering of recordings.
- Directors of photography co-ordinate and direct the photography of motion pictures, supervise camera operators and other crews and determine lighting, lenses, camera angles, backgrounds and other elements to achieve desired visual effect.

Employment requirements

Producers, directors and film editors

- A university degree or college diploma in the performing arts, broadcasting, journalism, business administration, theatre production or film studies
and
Experience in a technical or production occupation in motion pictures, broadcasting or theatre are usually required.

Choreographers

- A university degree or college diploma in dance, or a period of study at a school of dance
and
Extensive training with a dance company are usually required.

Record producers

- A university degree or college diploma in music or the recording arts
and
Experience in a technical or production occupation in the recording arts are usually required.

5131 Producers, Directors, Choreographers and Related Occupations

Directors of photography

- A university degree or college diploma in film studies or cinematography
and

Experience in camera operation or another technical occupation in video or motion picture production are usually required.

Demonstrated creative ability is required for all occupations in this unit group.

Additional information

- Membership in a related guild or union may be required.

Classified elsewhere

- *Managers – Publishing, Motion Pictures, Broadcasting and Performing Arts (0512)*
- *Photographers, Graphic Arts Technicians and Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts (522)*

5132 Conductors, Composers and Arrangers

This unit group includes those who conduct bands and orchestras, compose musical works and arrange instrumental and vocal compositions. They are employed by symphony and chamber orchestras, bands, choirs, sound recording companies, orchestras for ballet and opera performances or they may be self-employed.

Example titles

arranger	music adapter
bandmaster	musical director
choir director	orchestrator
composer	singer-songwriter-composer
conductor	songwriter
lyricist	

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Conductors select and interpret musical works and lead bands, orchestras and choirs during rehearsals and performances.
- Composers create musical compositions such as television and film scores, theme music, songs, symphonies and music for interactive products such as video games.
- Arrangers adapt and modify musical compositions to convey desired themes and to suit particular instrumental and vocal performances.

Conductors, composers and arrangers usually specialize in a particular type of music such as classical, country, jazz or popular.

Employment requirements

- A university degree in music or completion of a program at a music academy, conservatory or school of music is usually required.
- A period of specialized study related to conducting, composing or arranging is usually required.
- Experience as a musician is required.
- Musical and creative talent and ability, as demonstrated by a portfolio of work, are important hiring criteria.

Additional information

- Composers often work as arrangers.

Classified elsewhere

- *Musicians and Singers* (5133)
- *Producers, Directors, Choreographers and Related Occupations* (5131)

5133 Musicians and Singers

This unit group includes musicians, singers and teachers of vocal and instrumental music. Musicians and singers perform with orchestras, choirs, opera companies and popular bands in establishments such as concert halls, lounges and theatres and in film, television and recording studios. Music teachers teach in conservatories, academies and private homes.

Example titles

accompanist	opera singer
church organist	percussionist
guitar player	recording artist
instrumentalist	rock singer
musician	singer
music teacher – musicians	vocalist

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Musicians play one or more instruments as soloists or as members of a musical group before audiences or for recording purposes.
- Singers sing musical arrangements as soloists or as members of vocal groups before audiences or for recording purposes.
- Teachers of music or voice teach technique, interpretation and music theory to students through private or group lessons.

Musicians and singers usually specialize in specific types of music such as classical, country, ethnic, jazz, opera or popular music.

Employment requirements

- Musical training from a university or college or through private instruction is usually required.
- Members of orchestras and other professional classical musicians and singers usually require a university degree in music.
- Musical talent and ability, as demonstrated during an audition, are important hiring criteria.
- Membership in a guild or union related to the occupation or type of performance may be required.

Classified elsewhere

- *Conductors, Composers and Arrangers* (5132)
- Elementary school music teachers (in 4142 *Elementary School and Kindergarten Teachers*)
- Professors of music (in 4121 *University Professors*)
- Secondary school music teachers (in 4141 *Secondary School Teachers*)

5134 Dancers

This unit group includes dancers and dance teachers. Dancers are employed by ballet and dance companies, television and film productions and night clubs and similar establishments. Dance teachers are employed by dance academies and dance schools.

Example titles

ballet dancer
ballet teacher
ballroom dancing teacher
dance instructor

dancer
folkloric dancer
interpretative dancer
tap dancer

Main duties

Dancers perform some or all of the following duties:

- Practise and rehearse dance routines under direction or instruction to achieve desired interpretation and presentation
- Perform dances as soloists or as members of groups before live audiences or for film or television
- Train and exercise to maintain the required levels of ability and fitness
- May choreograph their own performances.

Dance Teachers perform some or all of the following duties:

- Teach dance technique and artistic interpretation to amateur and professional individuals and groups
- Teach the techniques, cultural origins and symbolic meanings of aboriginal, ethnic and folkloric dances
- Teach recreational dancing lessons such as ballroom dancing
- Prepare dance students for specific auditions and performances.

Dancers may specialize in specific types of dance such as ballet, ballroom, folk, jazz or modern.

- Membership in a guild or union related to the occupation or type of performance may be required.

Classified elsewhere

- *Choreographers (in 5131 Producers, Directors, Choreographers and Related Occupations)*
- *Other Performers (5232)*

Employment requirements

- A university degree or college diploma in dance
or
Graduation from a private dance school or academy may be required.
- Talent and ability, as demonstrated during an audition, are important hiring criteria.
- Dance teachers usually require experience as dancers.

5135 Actors and Comedians

Actors and comedians perform roles in motion picture, television, theatre and radio productions to entertain a variety of audiences. They are employed by motion picture, television, theatre and other production companies. This unit group includes acting teachers employed by private acting schools.

Example titles

acting teacher – private or studio
actor/actress
comedian

drama teacher
narrator

Main duties

Actors and comedians perform some or all of the following duties:

- Study and rehearse lines, gestures and expressions to interpret a role
- Portray roles in video or motion picture productions, television shows, theatre productions, radio dramas, commercials and other productions or perform the narration
- Sing or dance as required by specific roles
- Perform comedy acts in nightclubs alone or as members of comedy troupes
- Improvise a role.

Acting teachers perform some or all of the following duties:

- Train students in interpretation of scripts, speech, movement, and dramatic theory
- Prepare acting students for specific auditions and performances.

Employment requirements

- Demonstrated ability, based on an audition or previous acting roles, is an important hiring criteria.
- Acting programs are offered at universities, colleges and private acting schools.
- Acting teachers usually require experience as actors.
- Membership in a guild or union may be required.

Classified elsewhere

- *Announcers and Other Broadcasters* (5231)
- *Dancers* (5134)
- Drama professors (in 4121 *University Professors*)
- *Musicians and Singers* (5133)
- *Other Performers* (5232)

5136 Painters, Sculptors and Other Visual Artists

Painters, sculptors and other visual artists create original paintings, drawings, sculptures, engravings and other artistic works. They are usually self-employed. This group also includes art instructors and teachers, who are usually employed by art schools.

Example titles

artist	portrait painter
artistic painter	sculptor
art teacher (except primary, secondary and post-secondary education)	silkscreen artist watercolourist

Main duties

Painters, sculptors and other visual artists perform some or all of the following duties:

- Painters create drawings, paintings and other artwork using oils, pastels, watercolours, charcoal, ink and other media.
- Sculptors create sculptures, statues and other three-dimensional artwork by shaping, carving and working with materials such as clay, ice, paper, stone, wood or metal.
- Art instructors and teachers teach students the techniques and methods of drawing, painting, sculpting and other forms of artistic expression.

Employment requirements

- Creative ability and talent, as demonstrated by a portfolio of work, and knowledge of the safe use of materials, tools and equipment are required. Art programs are offered at universities, colleges and private art schools.
- A college diploma in fine arts techniques may be required.
- Art instructors and teachers may be required to have a university degree or college diploma in a field related to art.

Classified elsewhere

- *Artisans and Craftspersons* (5244)
- Art teachers (in 4121, 4131, 4141, 4142 – university, post-secondary, secondary and elementary education)
- *Graphic Designers and Illustrators* (5241)

5211 Library and Archive Technicians and Assistants

Library, archive and records management technicians and assistants assist users in accessing library or archive resources, participate in records management, assist in describing new acquisitions, participate in archive processing and storage, and conduct reference searches. They are employed by libraries, archives, records management branches and other establishments with library or archive services.

Example titles

archive assistant
archive technician
circulation assistant
library assistant

library technician
reference aide
technical indexer – library

Main duties

Library technicians and assistants perform some or all of the following duties:

- Assist library users in accessing books, films, photographs, maps, documents, electronic materials and other library materials
- Catalogue new library acquisitions under the direction of a librarian
- Issue for circulation library books and other materials
- Perform manual and on-line reference searches and make interlibrary loans for users
- Assist librarians in giving tours and providing children's and other specialized library programs
- Enter the checkout and return of books and other library materials if necessary.

Archive technicians and assistants perform some or all of the following duties:

- Assist in developing inventories, forms and finding aids
- Implement and update classification plans and records scheduling and disposal plans
- Codify and classify archival materials
- Put archival materials on microfilm
- Transfer materials from current to semicurrent status or put into permanent storage
- Purge, sort, reduce and sample archives
- Apply standards and policies for storage of archival materials
- Research and retrieve archival materials
- Participate in instructing and assisting users
- Ensure the use of computerized document systems.

Employment requirements

- A university degree
 - or
 - A diploma in archival studies
 - or
 - A college library technician program diploma is usually required.
- Computer literacy is required.

Classified elsewhere

- *Archivists* (5113)
- *Librarians* (5111)
- *Library Clerks* (1451)

5212 Technical Occupations Related to Museums and Art Galleries

This unit group includes workers who classify and catalogue museum and gallery artifacts, construct and install exhibits and displays, restore, maintain and store museum and gallery collections, frame artwork, and perform other functions in support of curatorial and conservation activities. They are employed in museums and galleries. Picture framers and taxidermists may also be employed in retail settings or may be self-employed. This unit group also includes museum and other interpreters who conduct guided tours. They are employed at art galleries, museums, parks, aquariums, zoos, interpretive centres, botanical gardens, cultural centres, nature sanctuaries, historic and heritage sites and other locations.

Example titles

conservation technician – museums and art galleries
curatorial assistant
heritage interpreter
museology technician
museum extension officer
museum interpreter

museum objects cataloguer
museum registrar
museum technician
picture framer – museum and art gallery preparator
restoration technician
taxidermist

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Conservation and restoration technicians assist in the restoration and conservation of artifacts under the direction of a conservator.
- Curatorial assistants assist in the research, handling and storage of artifacts.
- Museum interpreters conduct tours of museums, gallery exhibitions and historical, heritage and other sites, answer inquiries and provide information concerning exhibits or sites.
- Museum extension officers assist with the planning and development of travelling exhibitions and special events.
- Museology technicians protect and care for cultural artifacts and collections during exhibitions, while in transit and in storage.
- Museum registrars and cataloguers classify and assign registration numbers to artifacts and supervise inventory control.
- Preparators construct displays and dioramas, build models, install artifacts in displays and prepare artifacts for storage and shipping.
- Picture framers fabricate custom frames, measure and cut mats, mat enhancements and glass, and mount paintings, photographs and other art work.
- Taxidermists prepare and mount skins of birds or animals for preservation, scientific or display purposes.

Technical museum and gallery workers may specialize in a specific type of collection.

Employment requirements

- Registrars, cataloguers and interpreters may require a university degree in a field related to museum and gallery work.
- For other occupations in this unit group, completion of a college program in museum technology or conservation technology
or
Other technical or on-the-job training programs related to the work are required.

Additional information

- Museum interpreters may require specific scientific or academic credentials for employment by some museums, nature centres or other sites.

Classified elsewhere

- Assistant curators (in 5112 *Conservators and Curators*)
- Museum exhibit designers (in 5243 *Theatre, Fashion, Exhibit and Other Creative Designers*)
- *Tour and Travel Guides* (6441)

5221 Photographers

Photographers operate still cameras to photograph people, events, scenes, materials, products and other subjects. Photographers are employed by photographic studios, newspapers, magazines, museums and government, or they may be self-employed.

Example titles

aerial photographer
commercial photographer
forensic photographer
industrial photographer

photographer
photojournalist
portrait photographer
scientific photographer

Main duties

Photographers perform some or all of the following duties:

- Study requirements of a particular assignment and decide on type of camera, film, lighting and background accessories to be used
- Determine picture composition, make technical adjustments to equipment and photograph subject
- May operate scanners to transfer photographic images to computers
- May operate computers to manipulate photographic images
- May adapt existing photographic images and create new digitized images to be included in multimedia/newmedia products
- May use delicate instruments, such as optical microscopes attached to cameras
- May process exposed film
- May use airbrush, computer or other techniques to retouch negatives
- Medical photographers may work closely with medical illustrators.

Photographers may specialize in areas such as portrait photography, commercial photography, scientific photography, forensic photography, medical photography, digitized photography, multimedia photography or photojournalism.

Employment requirements

- A bachelor's degree in visual arts with specialization in photography
or
Completion of specialized training in photography in high school, college or specialized training schools
or
Extensive on-the-job training under the supervision of a photographer is required.

- Experience in, or knowledge of computerized photography or digital imaging may be required.
- Creative and technical ability, as demonstrated by a portfolio of work, are required.

Classified elsewhere

- *Film and Video Camera Operators (5222)*

5222 Film and Video Camera Operators

Film and video camera operators operate motion picture and video cameras and related equipment to record news, live events, films, videos and television broadcasts. They are employed by television networks and stations, motion picture and video production companies and in-house communications facilities of large corporations.

Example titles

assistant camera operator

camera operator

electronic news gathering (ENG) camera operator

film camera operator

motion picture camera operator

studio camera operator

television camera operator

video camera operator

Main duties

Film and video camera operators perform some or all of the following duties:

- Meet with director and senior members of camera crew to discuss assignment and determine filming sequences, camera movements and picture composition
- Select and set up camera equipment to be used, and attach lens, filters and film magazine to camera
- Adjust focus, exposure, lighting and other camera settings
- Operate film or video camera to record news, live events, films, videos and television broadcasts
- Label and record contents of exposed film, and complete report sheets
- Test, maintain and store equipment.

Employment requirements

- Completion of a college or technical program in broadcasting, audio-visual technology or a related field
and

Experience as a camera assistant are usually required.

- Creative and technical ability, as demonstrated by a portfolio of work and experience, may be required.

Additional information

- Progression to supervisory positions is possible with experience.
- Progression to director of photography positions is possible with additional training and experience.

Classified elsewhere

- *Audio and Video Recording Technicians (5225)*
- AV (audiovisual) assistants (in *5227 Support Occupations in Motion Pictures, Broadcasting and the Performing Arts*)
- Filmmakers and directors of photography (in *5131 Producers, Directors, Choreographers and Related Occupations*)
- *Photographers (5221)*
- Video artists (in *5136 Painters, Sculptors and Other Visual Artists*)
- Video transmission operators (in *5224 Broadcast Technicians*)

5223 Graphic Arts Technicians

Graphic arts technicians assist in conceptualizing a project, interpreting design specifications or sketches, preparing the page make-up, lay-out and lettering, and preparing production materials for press, electronic or multimedia publishing. They are employed by publishing, communications, advertising, marketing, printing and multimedia establishments, and by television and film production companies. They may also be self-employed.

Example titles

animated cartoon technician
animation painter
computer graphics technician

graphics technician
multimedia graphic design technician

Main duties

Graphic arts technicians perform some or all of the following duties:

- Review the graphic designer's instructions
- Produce or assist in developing and producing design concepts
- Capture elements such as titles, text, drawings, illustrations, graphics, lettering, colour harmonization, etc. using a computer
- Produce computerized images and drawings
- Digitize images using peripherals and transform them using retouching systems, graphic palettes or specialized software
- Perform the layout, page make-up and placement using the conceptual mock-ups provided
- Produce proofs and camera-ready materials and prepare film and any other prepress materials
- Paint or ink individual cells of 2-D or 3-D animated drawings according to animator's specifications using an electronic palette
- Lay out, draw or paint letters, figures, logos and designs for windows, advertisements, billboards, vehicles, books and publications using specialized software or painting equipment
- Work in an interdisciplinary environment.

Employment requirements

- A college diploma in commercial or graphic arts, computer graphics or animated design is required.
- Experience or training in multimedia design at a post-secondary, college or technical institution may be required.
- Creative ability and artistic talent, as demonstrated by a portfolio of work, are required.

Additional information

- Progression to graphic designer positions is possible with experience or supplementary training.

Classified elsewhere

- *Correspondence, Publication and Related Clerks* (1452)
- Desktop publishing specialists (in 1423 *Desktop Publishing Operators and Related Occupations*)
- *Graphic Designers and Illustrators* (5241)
- Imprinting technologists (in 9472 *Camera, Platemaking and Other Prepress Occupations*)

5224 Broadcast Technicians

Broadcast technicians install, set up, test, operate and repair electronic equipment used to record and transmit live and taped radio and television programs and to produce audio and video streaming broadcasts for the Internet. They are employed by radio and television broadcasting networks and stations, by broadcast equipment companies and by Internet-based communication providers.

Example titles

broadcast engineer
broadcasting switcher
broadcast technician
broadcast transmitter operator
master control room (MCR) equipment operator – broadcasting

master control room (MCR) technician -- broadcasting
mobile broadcasting equipment operator
regional transmitter technician
short-wave receiving station technician
video transmission operator

Main duties

Broadcast technicians perform some or all of the following duties:

- Monitor broadcast quality of live and taped radio and television programs
- Operate and monitor radio and television broadcasting systems to broadcast, receive signals and to regulate clarity and range of sounds and colours of recordings or broadcasts
- Operate broadcast equipment to produce audio and video streaming broadcasts for the Internet
- Make emergency repairs to equipment and substitute programs in case of signal failure
- Maintain, install and troubleshoot a wide variety of broadcast hardware and software
- Set up and operate consoles to pick up and select feed sources from different locations and to air radio or television programs and commercials
- May supervise other broadcast technicians.

Employment requirements

- Completion of a college program in broadcast technology or electronics is usually required.
- Senior and supervisory positions in this unit group require experience.

Classified elsewhere

- *Audio and Video Recording Technicians (5225)*
- *Film and Video Camera Operators (5222)*
- *Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts (5226)*

5225 Audio and Video Recording Technicians

Audio and video recording technicians operate equipment to record, mix and edit sound, music and videotape, for motion pictures, television and radio programs, videos, recordings and live events. They are employed by film, video and concert production companies, sound recording firms, theatre and dance companies, clubs, bands, multimedia companies, radio stations, television networks and video production and editing companies.

Example titles

audiovisual (AV) technician
multimedia sound technician
postproduction technician
radio technician
recording engineer
recording studio technician

sound effects editor
sound engineer
sound mixer
sound technician
video and sound recorder
video recording technician

Main duties

Audio and video recording technicians perform some or all of the following duties:

- Set up, prepare and adjust audio, recording, editing and reproducing equipment to record, edit and reproduce sound input or feed of pre-recorded material from tapes, records, compact discs, digital audio devices, and input from live microphones, satellites or microwave trucks for films, videos, radio and television programs and recordings
- Prepare and operate videotape recording and playback equipment to record videos, television programs, concerts and live events, and to edit video tape after production
- Operate electronic equipment to generate program titles, credits, sub-titles, graphic backgrounds or animation for television programs
- Operate audio consoles or computers, tape machines, microphones and sound processing equipment to mix, combine and edit music and sound at concerts and live events
- Operate dubbing machines to play back edited dialogue, music and sound effect tracks from different sources, in synchronization with motion picture film
- May supervise and co-ordinate the work of other audio and video recording technicians.

Employment requirements

- Completion of a college or other program in recording engineering, audiovisual technology or a related field
 - or
 - Experience as a recording studio assistant is usually required.
- Senior occupations in this unit group, such as recording and sound engineers, require experience.

Classified elsewhere

- *Broadcast Technicians (5224)*
- *Film and Video Camera Operators (5222)*
- Film editors (in 5131 Producers, Directors, Choreographers and Related Occupations)
- *Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts (5226)*

5226 Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts

This unit group includes a range of technical, co-ordinating and supervisory workers who co-ordinate and perform specific activities for television, radio and motion picture productions, news broadcasts, theatre and stage productions, and other live or recorded productions. They are employed by television and radio stations and networks, recording studios, motion picture and video production companies, concert promoters and theatre, stage and dance companies.

Example titles

costumier	property master – broadcasting
floor manager – broadcasting	settings shop foreman/woman
gaffer	special effects technician
key grip	stage manager
lighting technician	stage technician
make-up artist	stunt co-ordinator
program co-ordinator – broadcasting	theatre technician

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Floor managers co-ordinate camera operators and other technical staff, and cue announcers, actors and performers during news broadcasts and television program tapings.
- Key grips supervise grips, gaffers and stagehands who rig, place, move and dismantle lights, sets, backdrops, scenery and other stage equipment.
- Gaffers and lighting technicians set up, operate and make repairs to lights and other electrical equipment in studios and on sets and stages.
- Stunt co-ordinators and special effects technicians design and co-ordinate special effects such as fires, explosions and crashes.
- Make-up artists apply cosmetic and special effects make-up on actors and other performers.
- Costumiers study scripts to determine the necessary costumes; oversee the acquisition, fitting and maintenance of costumes.
- Settings shop foremen assist in preparing the construction specifications for sets.
- Property masters identify and list the necessary props and place them during rehearsals and performances.

- Floor managers require a portfolio of work.
- Make-up artists working in motion pictures, broadcasting and the performing arts may require a training program.
- Creative ability, as demonstrated by a portfolio of work, is required for make-up artists.
- For gaffers, lighting technicians, key grips and other stage technicians, completion of a college program or other specialized training program in technical production for theatre is required.
- Membership in a related union may be required.

Additional information

- There may be an overlap in duties among occupations in this unit group, depending on the size of the production or broadcasting studio.

Classified elsewhere

- *Audio and Video Recording Technicians (5225)*
- *Broadcast Technicians (5224)*
- *Film and Video Camera Operators (5222)*
- *Lighting designers (in 5243 Theatre, Fashion, Exhibit and Other Creative Designers)*
- *Support Occupations in Motion Pictures, Broadcasting and the Performing Arts (5227)*

Employment requirements

- For most occupations in this unit group, completion of a college or university program in broadcasting, theatre arts or a related field
and
Several years of experience in a related support or assisting occupation in motion pictures, broadcasting or the performing arts are required.

5227 Support Occupations in Motion Pictures, Broadcasting and the Performing Arts

This unit group includes workers who perform support duties related to broadcasting and to the production of motion pictures and the performing arts. They are employed by television and radio stations and networks, recording studios, motion picture and video production companies and by theatre and stage companies. This unit group also includes projectionists employed by IMAX or automated cinemas and drive-in theatres.

Example titles

boom grip
camera crane operator
dresser
grip
lighting assistant
projectionist
prompter

props person
script assistant
set builder
set dresser
special effects assistant
spotlight operator

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Camera crane operators set up, assemble, adjust, maintain and replace reels and projector equipment; detect and repair mechanical and electrical problems; and change and install an electronic control panel using automated equipment.
- Motion picture projectionists check the condition of the copy; set up and load film reels on movie and drive-in theatre projection systems, adjust focus, sound levels and other projector and theatre settings, and maintain projection equipment.
- Props persons and set builders assemble, repair, place, build and oversee props.
- Script assistants distribute scripts to actors, keep detailed notes of all actions, positions and camera angles and photograph and date scenes.
- Grips and riggers rig, place, move and dismantle sets, backdrops, scenery and other stage equipment.
- Dressers clean, maintain, transport and store costumes, and assist performers to dress in costumes.

- Certification for projectionists is available, but voluntary, in New Brunswick. In Quebec, projectionists are regulated under operators of electrical machines, cinema equipment.
- Projectionists are required to be licensed by their province of employment.

Additional information

- There may be an overlap in duties among occupations in this unit group, depending on the size of the production or broadcasting studio.
- Progression to related technical occupations in motion pictures, broadcasting or the performing arts is possible with additional training or experience.

Classified elsewhere

- *Audio and Video Recording Technicians (5225)*
- *Broadcast Technicians (5224)*
- *Film and Video Camera Operators (5222)*
- *Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts (5226)*

Employment requirements

- Completion of secondary school is usually required.
- Most occupations in this unit group require completion of college courses in broadcasting, theatre arts or a related field
 - or
 - A period of on-the-job training.

5231 Announcers and Other Broadcasters

Announcers and other broadcasters read news, sports, weather, commercial and public service messages and host entertainment and information programs for broadcast on radio or television. They are primarily employed by radio and television stations and networks and by commercial firms that produce advertisements for radio or television.

Example titles

announcer
broadcaster
disc jockey – broadcast
news reader
radio host/hostess

sports announcer
talk show host/hostess
television host/hostess
traffic reporter
weather reporter

Main duties

Announcers and other broadcasters perform some or all of the following duties:

- Select and introduce music, videos and other entertainment material for broadcast and make commercial and public service announcements
- Act as host/hostess or master of ceremonies, introduce and interview guests and conduct proceedings of shows or programs
- Read news, sports and weather for radio and television
- Report on weather conditions using information provided by weather forecasting services
- Report on traffic conditions by maintaining contact with external sources of information or by observing traffic from air or land vehicle
- May present own material or material prepared by others.

Employment requirements

- Completion of a college radio or television arts program is usually required.
- Practical training, such as work at a college radio station, may be required.
- Talent and ability, as demonstrated during an audition, are important hiring criteria.
- Membership in a guild or union related to the occupation or type of performance may be required.

Additional information

- Movement to occupations in journalism is possible for those with an educational background in journalism or a related field.

Classified elsewhere

- Broadcast journalists who prepare and present their own reports (in 5123 *Journalists*)
- *Support Occupations in Motion Pictures, Broadcasting and the Performing Arts* (5227)

5232 Other Performers

This unit group includes circus performers, magicians, models, puppeteers and other performers not elsewhere classified. They are employed by circuses, nightclubs, theatre, advertising and other production companies or may be self-employed.

Example titles

acrobat
busker
circus performer
clown

fashion model
magician
puppeteer
ventriloquist

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Buskers entertain passers-by on sidewalks and in parks with magic tricks, juggling acts, short dramatic works, music and other entertaining displays.
- Circus performers such as trapeze artists, high-wire walkers, clowns and jugglers entertain audiences with thrilling and humorous acts.
- Magicians and illusionists perform sleight-of-hand tricks, disappearing acts and other illusions.
- Fashion models display clothing and merchandise in commercials, advertisements and fashion shows and pose for artists and photographers.
- Puppeteers operate puppets and marionettes.

Employment requirements

- Circus performers and acrobats may require a period of study at a circus school.
- Completion of modelling courses is usually required for models.
- Training for other occupations in this unit group is often obtained under the guidance of a practitioner.
- Talent and ability, as demonstrated during an audition, are important hiring criteria.
- Membership in a guild or union related to the occupation or type of performance may be required.

Additional information

- There is little mobility between the different occupations in this unit group.

Classified elsewhere

- *Actors and Comedians* (5135)
- *Dancers* (5134)
- *Musicians and Singers* (5133)

5241 Graphic Designers and Illustrators

Graphic designers conceptualize and produce graphic art and visual materials to effectively communicate information for publications, advertising, films, packaging, posters, signs and interactive media such as Web sites and CD-ROMs. They are employed by advertising and graphic design firms, by establishments with advertising or communications departments and by multimedia production companies, or they may be self-employed. Graphic designers who are also supervisors, project managers or consultants are included in this unit group. Illustrators conceptualize and create illustrations to represent information through images. They are almost solely self-employed.

Example titles

advertising designer
animator – animated films
cartoonist
commercial artist
cybergraphic designer
graphic artist
graphic designer
graphic designer – multimedia

graphic designer – multimedia, interactive or new media
illustrator
layout designer
medical illustrator
multimedia illustrator
scientific illustrator

Main duties

Graphic designers perform some or all of the following duties:

- Consult with clients to establish the overall look, graphic elements and content of communications materials in order to meet their needs
- Determine the medium best suited to produce the desired visual effect and the most appropriate vehicle for communication
- Develop the graphic elements that meet the clients' objectives
- Prepare sketches, layouts and graphic elements of the subjects to be rendered using traditional tools, multimedia software and image processing, layout and design software
- Estimate cost of materials and time to complete graphic design
- Use existing photo and illustration banks and typography guides or hire an illustrator or photographer to produce images that meet clients' communications needs
- Establish guidelines for illustrators or photographers
- Co-ordinate all aspects of production for print, audio-visual or electronic materials, such as Web sites, CD-ROMs, interactive terminals, etc.
- Co-ordinate sub-contracting
- Work in a multidisciplinary environment
- Supervise other graphic designers or graphic arts technicians.

Illustrators perform some or all of the following duties:

- Consult with clients to determine the nature and content of illustrations in order to meet their communications needs
- Develop and produce realistic or representational sketches and final illustrations, by hand or using computer-assisted design (CAD) software, for printed materials such as books, magazines, packaging, greeting cards, stationery, etc.
- Assist in developing storyboards for electronic productions such as multimedia, interactive and digital products, television advertising and productions, etc.
- Produce 2-D and 3-D animated drawings or computer illustrations
- May adapt existing illustrations.

Illustrators may specialize in a particular field such as illustrations for children, advertising, editorials, humour, or medical, scientific or technical illustration, or multimedia design.

Employment requirements

- A university degree in visual arts with specialization in graphic design, commercial art, graphic communications or cartooning
or
Completion of a college diploma program in graphic arts is required.
- Experience or training in multimedia design at a post-secondary, college or technical institution may be required.

5241 Graphic Designers and Illustrators

- In addition to the arts, training in biology, engineering, architecture or a scientific field is usually required for medical, technical and scientific illustrators.
- Creative ability and artistic talent, as demonstrated by a portfolio of work, are required for graphic designers and illustrators.

Additional information

- Progression to management or senior design positions is possible with experience.
- The title "registered graphic designer" is recognized by law in Ontario.

Classified elsewhere

- Advertising managers (in 0611 *Sales, Marketing and Advertising Managers*)
- *Graphic Arts Technicians* (5223)
- *Interior Designers* (5242)
- *Painters, Sculptors and Other Visual Artists* (5136)

5242 Interior Designers

Interior designers conceptualize and produce aesthetic, functional and safe designs for interior spaces in residential, commercial, cultural, institutional and industrial buildings. They are employed by architectural firms, interior design firms, retail establishments, construction companies, hospitals, airlines, hotel and restaurant chains, and other establishments or they may be self-employed.

Example titles

aircraft interior designer
interior designer
interior design technician
kitchen designer

office space planner
project manager, interior design
retail space planner

Main duties

Interior designers perform some or all of the following duties:

- Consult with clients to determine needs, preferences, safety requirements and purpose of space
- Develop detailed plans and 3-D models showing arrangement of walls, dividers, displays, lighting and other fixtures using computer-assisted design (CAD) software and graphics software
- Develop plans, elevations, cross sections and detailed drawings, and advise on selection of colours, finishes and materials, floor and wall coverings, interior and exterior lighting, furniture and other items, taking into account ergonomic and occupational health standards
- Estimate costs and materials required and may advise on leasing, real estate and marketing
- Prepare plans and specifications for the final interior designs in accordance with current practices and codes
- Work in a multidisciplinary environment
- May direct site work crews and subcontractors.

Interior designers may specialize in designing interiors for residential, commercial, institutional, cultural and industrial buildings and for aircraft, ships or trains, trade shows and exhibitions.

Employment requirements

- A university degree or college diploma in interior design is usually required.
- Creative ability and artistic talent, as demonstrated by a portfolio of work is required.
- Registration with the interior design association in the province of employment may be required.

- The National Council for Interior Design Qualification (NCIDQ) examination may be required after six years of combined study and experience.
- Certification is offered in Nova Scotia, New Brunswick, certain cities in Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.

Classified elsewhere

- *Graphic Designers and Illustrators* (5241)
- *Industrial Designers* (2252)
- Interior decorators (in 6421 *Retail Salespersons and Sales Clerks*)
- Lighting designers (in 5243 *Theatre, Fashion, Exhibit and Other Creative Designers*)
- *Theatre, Fashion, Exhibit and Other Creative Designers* (5243)

5243 Theatre, Fashion, Exhibit and Other Creative Designers

Designers in this unit group conceptualize and produce designs for film, television, theatre and video productions, garments and textiles, displays and exhibits, and for other creative items such as jewellery and trophies. Theatre designers are employed by performing arts and broadcasting companies and by festivals; fashion designers are employed by clothing and textiles companies or may be self-employed; and exhibit designers are employed by museums and retail establishments. Other creative designers in this unit group are employed by manufacturing establishments or may be self-employed.

Example titles

clothing designer
costume designer
couturier – haute couture
display designer
fabric designer
fashion designer
fur designer

jewellery designer
lighting designer
museum exhibit designer
shoe designer
trophy designer
window display designer

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Theatre designers design and create settings, scenic environments, properties, costumes and lighting for theatre, film and video productions, operas and ballets.
- Fashion designers design and create clothing and accessories for men, women and children.
- Exhibit designers plan and develop permanent and temporary or moveable exhibits and displays for museum exhibitions, trade shows, conventions, retail spaces and other exhibitions.

Theatre designers may specialize in costume, lighting or set design; fashion designers may specialize in men's, women's or children's apparel or in different lines such as sportswear, footwear or formal wear.

Employment requirements

- A university degree in fine arts or visual arts with specialization in theatre design, clothing design or exhibit design
or
Completion of a college or art school program in theatre design, clothing design or exhibit design is required.
- Creative ability, as demonstrated by a portfolio of work, is required.
- Use of computer-aided design (CAD) software may be required.

Additional information

- Designers may advance to supervisory and management positions.

Classified elsewhere

- Diorama makers – museums and galleries (in *5212 Technical Occupations Related to Museums and Art Galleries*)
- *Graphic Designers and Illustrators* (5241)
- *Industrial Designers* (2252)
- *Interior Designers* (5242)
- *Patternmakers – Textile, Leather and Fur Products* (5245)
- *Tailors, Dressmakers, Furriers and Milliners* (7342)

5244 Artisans and Craftspersons

This unit group includes those who use manual and artistic skills to design and make ornamental objects, pottery, stained glass, jewellery, rugs, blankets, other handicrafts and artistic floral arrangements. Makers of stringed musical instruments are also included in this unit group. Most craftspersons are self-employed. Artistic floral arrangers are usually employed in florist shops and floral departments of retail establishments or may be self-employed. Craft instructors are also included in this unit group and are employed by artisan guilds, colleges, private studios and recreational organizations.

Example titles

artisan	metal arts worker
artistic floral arranger	potter
carver	silversmith
craft instructor (except education)	stained glass artist
craftsperson	stringed instrument maker
glass blower	totem pole carver
leather worker	weaver – arts and crafts

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Carvers use hand tools and woodworking machines to produce carvings from wood, stone and other materials and to carve ornamental designs into wooden furniture and other objects.
- Glass blowers design and create glass objects using blowpipes and artisan's hand tools and equipment.
- Metal arts workers design metal jewellery, utensils, implements, wall hangings and other objects and create them from gold, silver, copper, pewter and other metals.
- Potters design ornamental and ceramic functional earthenware pieces and create them using clay, moulds, potter's wheels and other equipment, glazing materials and kilns.
- Stained glass artists design stained glass windows, lampshades and other objects and cut, paint, fire and assemble pieces of stained glass to create such products.
- Stringed instrument makers construct stringed instruments applying their knowledge of wood, ebonite, metal properties and other materials and instrument design using hand and power tools.
- Weavers use hands or loom to interlace strips of flexible material such as wool, cotton, silk, grasses, bark and rawhide to make baskets, wreaths, wall hangings, clothing, rugs, blankets and other objects.
- Craft instructors prepare craftmaking lessons, gather the required working materials and demonstrate and teach craftmaking techniques.

- Artistic floral arrangers design bouquets, corsages, sprays, wreaths and other floral arrangements and select natural and artificial flowers, foliage and decorative accessories to create arrangements or other floral items to suit customers' requirements.

Employment requirements

- Skills are often learned through apprenticeship with a master craftsperson.
- Training programs are offered by artisan guilds, colleges and private studios.
- Creative ability and talent, as demonstrated by a portfolio of work, and knowledge of safe handling of material, tools and equipment are required.
- A college diploma in fine craft techniques may be required.

Classified elsewhere

- *Cabinetmakers (7272)*
- Fabric-making occupations in manufacturing (in 9442 *Weavers, Knitters and Other Fabric-Making Occupations*)
- *Jewellers, Watch Repairers and Related Occupations (7344)*
- *Painters, Sculptors and Other Visual Artists (5136)*

5245 Patternmakers – Textile, Leather and Fur Products

Patternmakers in this unit group create master patterns for the production of garments, footwear and other textile, leather or fur products. They are employed by pattern manufacturers, textile, leather or fur products manufacturers or they may be self-employed.

Example titles

dress patternmaker

embroidery patternmaker

fur garment patternmaker

garment patternmaker

leather products patternmaker

shoe patternmaker

textile products patternmaker

Main duties

Patternmakers in this unit group perform some or all of the following duties:

- Examine sketches, samples of articles and specifications of designs to determine number, size and shape of pattern parts and assess the amount of cloth required to make product
- Draw, lay out and cut master pattern of product
- Outline parts of pattern on paper and mark pattern to indicate details such as placement of pockets and pleats on garments, decorative stitching on shoe parts or eyelets on canvas products
- Create pattern size variations from master pattern using computer or drafting instruments, or forward pattern to computer operator to create pattern size variations
- Lay out master pattern on fabric and cut sample pattern
- Mark size, identification, style and sewing instructions on sample patterns.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Supervisors, Fabric, Fur and Leather Products Manufacturing (9225)*

Employment requirements

- Completion of secondary school is required.
- College courses in design and patternmaking
or
One to two years of on-the-job training are required.
- Courses in computer-assisted patternmaking may be required.

5251 Athletes

Athletes participate in competitive sports events on an amateur or professional basis. They play team sports such as hockey, baseball, football and lacrosse, or compete in individual sports such as skiing, figure skating, boxing or track and field. Athletes are employed by professional team organizations or they may be self-employed.

Example titles

athlete	hockey player
baseball player	jockey
boxer	professional athlete
figure skater	skier
football player	sprinter
golfer	track athlete
harness race driver	

Main duties

Athletes perform some or all of the following duties:

- Train under the direction of a coach or trainer to qualify for competition
- Attend scheduled practice and training sessions
- Participate in local, regional, provincial, national or international competitions and sporting events
- Assess performance after an event to identify strengths and weaknesses.

Employment requirements

- Demonstrated ability in a particular sport is required.
- Extensive training under the supervision of a coach is required.
- Certification with a particular sports federation may be required.
- A background combining athletic training and college or university studies is strongly recommended.

Classified elsewhere

- *Coaches* (5252)
- *Sports instructors* (in 5254 *Program Leaders and Instructors in Recreation, Sport and Fitness*)
- *Sports Officials and Referees* (5253)

5252 Coaches

Coaches prepare and train individual athletes or teams for competitive events. They are employed by national and provincial sports organizations, professional and amateur sports teams, sports clubs and universities or they may be self-employed. This unit group also includes sports scouts who identify and recruit athletes for professional sports teams. They are employed by professional sports organizations.

Example titles

coach
figure skating coach
football scout
gymnastics coach
head coach
hockey coach

hockey scout
national team coach
soccer coach
sports scout
swimming coach
volleyball coach

Main duties

Coaches perform some or all of the following duties:

- Identify strengths and weaknesses of athletes or teams
- Plan, develop and implement training and practice sessions
- Nurture and develop athletes' potential skills and abilities
- Develop, plan and co-ordinate competitive schedules and programs
- Motivate and prepare athletes or teams for competitive events or games
- Formulate competitive strategy, develop game plans and direct athletes and players during games or athletic events
- Analyse and evaluate athletes' or teams' performances and modify training programs.

Sports scouts perform some or all of the following duties:

- Identify and recruit developing athletes for professional sports teams
- Observe and evaluate prospective athletes' skills and performance, and review their past record
- File reports on scouting assessments and recommendations with professional team employers.

Employment requirements

Coaches

- Completion of the National Coaching Certificate program is usually required for individual and team sports coaches in all sports.
- National Coaching Certificate Level 3 is usually required for provincial coaches.

- National Coaching Certificate Level 4 is usually required for coaches of national team athletes.
- A degree in physical education may be required.
- Experience in and technical knowledge of the sport is required.

Sports scouts

- Experience in and technical knowledge of the sport is required.

Classified elsewhere

- *Athletes (5251)*
- *Athletic therapists (in 3144 Other Professional Occupations in Therapy and Assessment)*
- *Program Leaders and Instructors in Recreation, Sport and Fitness (5254)*
- *Sports Officials and Referees (5253)*

5253 Sports Officials and Referees

Sports officials and referees observe and enforce rules and regulations governing sporting events, athletic games and sports competitions. They are employed by national, provincial and local sporting commissions, organizations and leagues.

Example titles

athletics judge	racetrack timer
clerk of the course – racetrack	referee
figure skating judge	sports linesman/woman
goal judge	sports official
harness racing starter	umpire

Main duties

Sports officials and referees perform some or all of the following duties:

- Officiate at sporting events or athletic competitions to maintain standards of play and to ensure that game rules and safety regulations are observed
- Record lapsed time and keep scores during events or competitions
- Judge the performance of competitors, award points, impose penalties for infractions and determine results
- Compile scores and other athletic records
- Establish and maintain rapport with coaches, players and organizing committees
- Verify credentials of athletes or animals engaged in sports or related special events and respond to written protests.

Employment requirements

- Sports officials require certification by and registration with a sport governing body or commission.
- Sports referees require completion of an officiating program offered by a sport governing body.

Classified elsewhere

- *Coaches (5252)*
- *Program Leaders and Instructors in Recreation, Sport and Fitness (5254)*

5254 Program Leaders and Instructors in Recreation, Sport and Fitness

Program leaders and instructors in recreation, sport and fitness lead and instruct groups and individuals in recreational, sports, fitness or athletic programs. They are employed by community centres, sports and fitness clubs, outdoor centres, resorts, recreational facilities, health care facilities, correctional institutions, government departments, private businesses, tourism associations and similar establishments.

Example titles

aerobics instructor

camp counsellor

Certified personal trainer

day camp leader

fitness instructor

gymnastics teacher

lifeguard

personal trainer

playground worker

recreation program leader

riding instructor

ski instructor

ski patrol

swimming instructor – sports

Main duties

Program leaders and instructors in recreation, sport and fitness perform some or all of the following duties:

- Plan and carry out recreational, athletic, fitness and sports activities
- Assemble supplies and sports and game equipment
- Demonstrate and instruct athletic, fitness or sports activities and techniques
- Instruct groups and individuals in arts, crafts and similar activities and lead groups and individuals in recreational or leisure programs
- Attend to clients with special needs
- Provide lifestyle awareness information
- Conduct therapeutic recreational or athletic activities
- Monitor recreational, sports or fitness activities to ensure safety and provide emergency or first aid assistance when required
- Enforce safety rules and regulations
- Assist with co-ordination of special events
- Schedule activities, keep logs, maintain records and prepare reports
- May train and supervise staff
- May maintain and repair sports equipment.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a college program in recreation or physical education or extensive experience in a specific recreational or sports program activity is usually required.

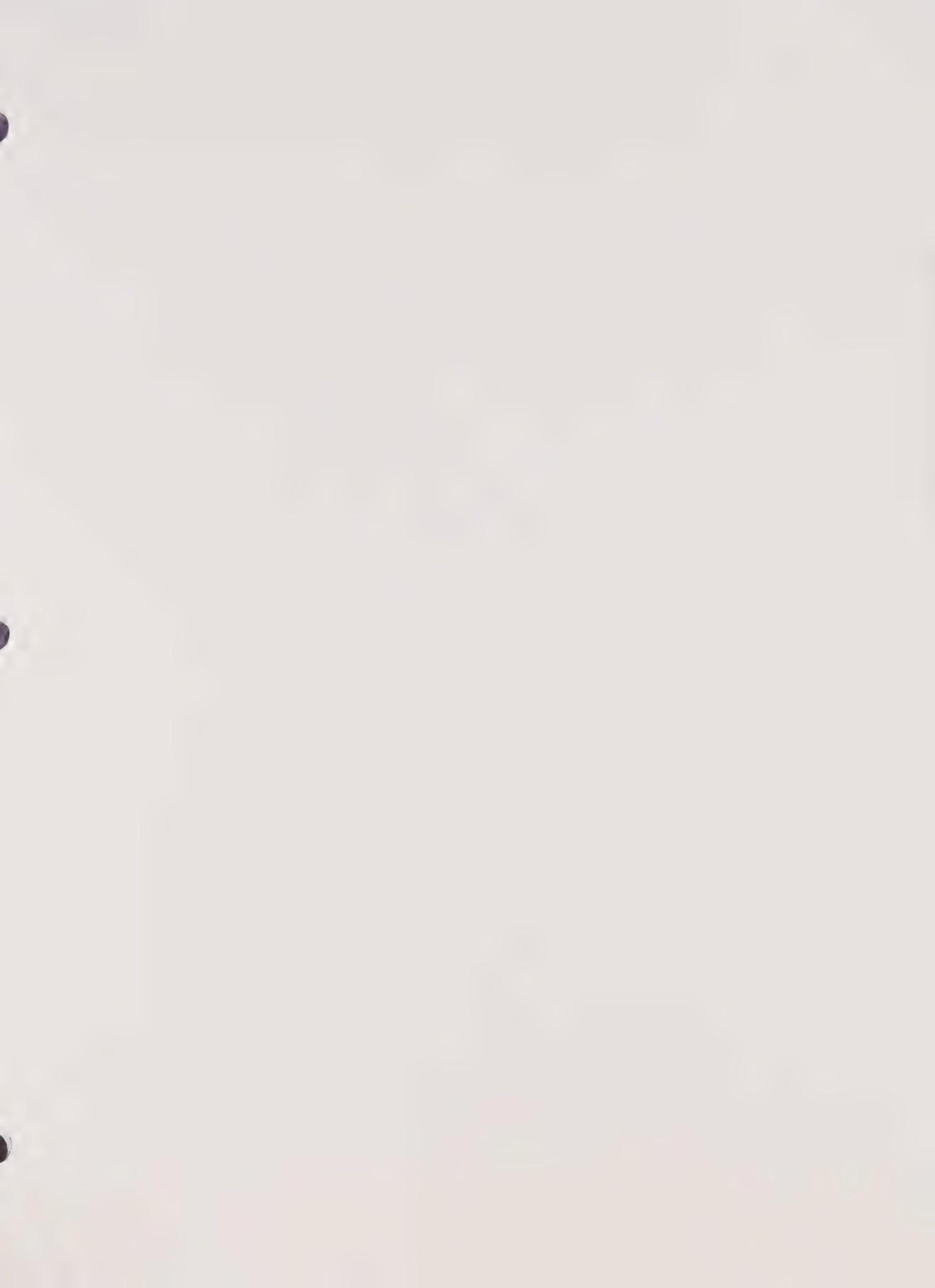
- Certification is usually required in a specific area of recreational, sports or fitness activity, such as ski instructor or personal trainer, or in first aid or emergency care.
- Demonstrated ability in a particular recreational, sports or fitness discipline is required.

Classified elsewhere

- *Other Instructors* (4216)

• Recreation and sports supervisors (in 4167 *Recreation, Sports and Fitness Program Supervisors and Consultants*)

- *Recreation, Sports and Fitness Program and Service Directors* (0513)



SALES AND SERVICE OCCUPATIONS

Major Group 62

SKILLED SALES AND SERVICE OCCUPATIONS

621 Sales and Service Supervisors

- 6211 Retail Trade Supervisors
- 6212 Food Service Supervisors
- 6213 Executive Housekeepers
- 6214 Dry Cleaning and Laundry Supervisors
- 6215 Cleaning Supervisors
- 6216 Other Service Supervisors

622 Technical Sales Specialists, Wholesale Trade

- 6221 Technical Sales Specialists - Wholesale Trade

623 Insurance and Real Estate Sales Occupations and Buyers

- 6231 Insurance Agents and Brokers
- 6232 Real Estate Agents and Salespersons
- 6233 Retail and Wholesale Buyers
- 6234 Grain Elevator Operators

624 Chefs and Cooks

- 6241 Chefs
- 6242 Cooks

625 Butchers and Bakers

- 6251 Butchers, Meat Cutters and Fishmongers - Retail and Wholesale
- 6252 Bakers

626 Police Officers and Firefighters

- 6261 Police Officers (Except Commissioned)
- 6262 Firefighters

627 Technical Occupations in Personal Service

- 6271 Hairstylists and Barbers
- 6272 Funeral Directors and Embalmers

Major Group 64

INTERMEDIATE SALES AND SERVICE OCCUPATIONS

641 Sales Representatives, Wholesale Trade

- 6411 Sales Representatives - Wholesale Trade (Non-Technical)

642 Retail Salespersons and Sales Clerks

6421 Retail Salespersons and Sales Clerks

643 Occupations in Travel and Accommodation

6431 Travel Counsellors

6432 Purzers and Flight Attendants

6433 Airline Sales and Service Agents

6434 Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)

6435 Hotel Front Desk Clerks

644 Tour and Recreational Guides and Casino Occupations

6441 Tour and Travel Guides

6442 Outdoor Sport and Recreational Guides

6443 Casino Occupations

645 Occupations in Food and Beverage Service

6451 Maîtres d'hôtel and Hosts/Hostesses

6452 Bartenders

6453 Food and Beverage Servers

646 Other Occupations in Protective Service

6461 Sheriffs and Bailiffs

6462 Correctional Service Officers

6463 By-Law Enforcement and Other Regulatory Officers, n.e.c.

6464 Occupations Unique to the Armed Forces

6465 Other Protective Service Occupations

647 Childcare and Home Support Workers

6471 Visiting Homemakers, Housekeepers and Related Occupations

6472 Elementary and Secondary School Teacher Assistants

6474 Babysitters, Nannies and Parents' Helpers

648 Other Occupations in Personal Service

6481 Image, Social and Other Personal Consultants

6482 Estheticians, Electrologists and Related Occupations

6483 Pet Groomers and Animal Care Workers

6484 Other Personal Service Occupations

Major Group 66

ELEMENTAL SALES AND SERVICE OCCUPATIONS

661 Cashiers

6611 Cashiers

662 Other Sales and Related Occupations

6621 Service Station Attendants

6622 Grocery Clerks and Store Shelf Stockers

6623 Other Elemental Sales Occupations

664 Food Counter Attendants, Kitchen Helpers and Related Occupations

6641 Food Counter Attendants, Kitchen Helpers and Related Occupations

665 Security Guards and Related Occupations

6651 Security Guards and Related Occupations

666 Cleaners

6661 Light Duty Cleaners

6662 Specialized Cleaners

6663 Janitors, Caretakers and Building Superintendents

667 Other Occupations in Travel, Accommodation, Amusement and Recreation

6671 Operators and Attendants in Amusement, Recreation and Sport

6672 Other Attendants in Accommodation and Travel

668 Other Elemental Service Occupations

6681 Dry Cleaning and Laundry Occupations

6682 Ironing, Pressing and Finishing Occupations

6683 Other Elemental Service Occupations

6211 Retail Trade Supervisors

Retail trade supervisors supervise and co-ordinate the activities of workers in the following unit groups: *Retail Salespersons and Sales Clerks* (6421), *Cashiers* (6611), *Grocery Clerks and Store Shelf Stockers* (6622) and *Other Elemental Sales Occupations* (6623). They are employed by stores and other retail businesses, wholesale businesses that sell on a retail basis to the public, rental service establishments and businesses involved in door-to-door soliciting and telemarketing.

Example titles

department store supervisor	rental service supervisor
head cashier	route supervisor, retail sales
liquor store supervisor	telemarketing supervisor
produce department supervisor	

Main duties

Retail trade supervisors perform some or all of the following duties:

- Supervise and co-ordinate sales staff and cashiers
- Assign sales workers to duties and prepare work schedules
- Authorize payments by cheque and the return of merchandise
- Sell merchandise to customers
- Resolve problems that arise, such as customer complaints and supply shortages
- Maintain specified inventory and order merchandise
- Prepare reports regarding sales volumes, merchandising and personnel matters
- Hire and train or arrange for the training of new sales staff.

Employment requirements

- Completion of secondary school is usually required.
- Previous retail sales experience as a retail salesperson or sales clerk, cashier, telemarketer, door-to-door salesperson or rental agent is required.

Additional information

- Progression to management positions in retail trade is possible with additional training or experience.

Classified elsewhere

- *Food Service Supervisors* (6212)
- *Retail Trade Managers* (0621)

6212 Food Service Supervisors

Food service supervisors, supervise, direct and co-ordinate the activities of workers who prepare, portion and serve food. They are employed by hospitals and other health care establishments and by cafeterias, catering companies and other food service establishments.

Example titles

cafeteria supervisor, food services
canteen supervisor

catering supervisor
food service supervisor

Main duties

Food service supervisors perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of staff who prepare, portion and serve food
- Estimate and order ingredients and supplies required for meal preparation
- Prepare food order summaries for chef according to requests from dieticians, patients in hospitals or other customers
- Establish methods to meet work schedules
- Maintain records of stock, repairs, sales and wastage
- Train staff in job duties, and sanitation and safety procedures
- Supervise and check assembly of regular and special diet trays and delivery of food trolleys to hospital patients
- Ensure that food and service meet quality control standards
- May participate in the selection of food service staff and assist in the development of policies, procedures and budgets
- May plan cafeteria menus and determine related food and labour costs.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a community college program in food service administration, hotel and restaurant management or related discipline
 - or*
 - Several years of experience in food preparation or service are required.

Classified elsewhere

- Banquet captains (in 6453 *Food and Beverage Servers*)
- *Maitres d'hôtel and Hosts/Hostesses* (6451)
- *Restaurant and Food Service Managers* (0631)

6213 Executive Housekeepers

Executive housekeepers direct and control the operations of housekeeping departments within hotels, hospitals and other establishments.

Example titles

assistant executive housekeeper
executive housekeeper
hospital executive housekeeper

hotel executive housekeeper
housekeeping director
housekeeping manager

Main duties

Executive housekeepers perform some or all of the following duties:

- Establish and implement operational procedures for the housekeeping department
- Plan and co-ordinate the activities of housekeeping supervisors and their crews
- Co-ordinate the inspection of assigned areas to ensure that health regulations, safety standards and departmental policies are being met
- Select and purchase equipment and supplies, and maintain inventory
- Arrange for maintenance and repair of equipment and machinery
- Hire, train and supervise housekeeping staff
- Maintain financial records and prepare budgets, payroll and employee schedules.

Employment requirements

- Completion of secondary school is usually required.
- A university degree or college diploma in hospital management, hotel management or business administration is usually required.
- Extensive experience as a cleaning supervisor may substitute for formal education requirements.

Classified elsewhere

- *Accommodation Service Managers* (0632)
- *Facility Operation and Maintenance Managers* (0721)
- Housekeeping supervisors (in 6215 *Cleaning Supervisors*)

6214 Dry Cleaning and Laundry Supervisors

Dry cleaning and laundry supervisors supervise and co-ordinate the activities of workers in the following unit groups: *Dry Cleaning and Laundry Occupations* (6681) and *Ironing, Pressing and Finishing Occupations* (6682). They are employed by dry cleaning and laundry establishments, fur cleaning establishments, commercial laundries and laundries in hotels, hospitals and other institutions.

Example titles

dry cleaning supervisor
foreman/woman – laundry and dry cleaning

laundry supervisor
production supervisor, dry cleaning

Main duties

Dry cleaning and laundry supervisors perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of dry cleaning and laundry staff
- Establish and implement production routines and co-ordinate work activities with other departments
- Monitor quality and production levels
- Requisition supplies
- Hire and train or arrange for training of workers
- Oversee the cleaning of suedes, leathers and other difficult items.

Employment requirements

- Completion of secondary school is usually required.
- Experience as a dry cleaning or laundry machine operator is required.

Additional information

- Progression to managerial positions, such as dry cleaning managers, is possible with additional training or experience.

Classified elsewhere

- *Dry Cleaning and Laundry Occupations* (6681)
- Dry cleaning services managers (in 0651 *Other Services Managers*)

6215 Cleaning Supervisors

Cleaning supervisors supervise and co-ordinate the activities of workers in the following unit groups: *Light Duty Cleaners* (6661), *Specialized Cleaners* (6662), and *Janitors, Caretakers and Building Superintendents* (6663). Cleaning supervisors are employed by hospitals and other health care institutions, hotels, motels, schools and other educational institutions, commercial and industrial establishments, home and office cleaning establishments and by various specialized cleaning companies.

Example titles

building cleaning supervisor
carpet cleaning supervisor
cleaning supervisor
head caretaker

head custodian
head janitor
window washing supervisor

Main duties

Cleaning supervisors perform some or all of the following duties:

- Supervise and co-ordinate the work of light duty, industrial or specialized cleaners and janitors
- Inspect sites or facilities to ensure established safety and cleanliness standards are met
- Recommend or arrange for additional services required such as painting, repair work, renovations or replacement of furnishings and equipment
- Hire and train cleaning staff
- Prepare work schedule and co-ordinate activities with those of other departments
- Prepare budget, estimate costs and keep financial records
- Receive payment for specialized cleaning jobs
- May perform certain cleaning duties.

Employment requirements

- Completion of secondary school is usually required.
- Previous experience in a particular area of cleaning is usually required.
- Previous supervisory experience may be required.

Classified elsewhere

- Building maintenance supervisors (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)
- *Executive Housekeepers* (6213)
- *Specialized Cleaners* (6662)

6216 Other Service Supervisors

Supervisors in this unit group supervise and co-ordinate the activities of hotel accommodation service clerks, theatre ushers and attendants, reservation clerks, sports and recreation club workers, commissionaires, security guards and other service workers not elsewhere classified. They are employed by service establishments throughout the public and private sectors.

Example titles

campground supervisor
hotel clerk supervisor
parking lot supervisor
reservations supervisor
supervisor, clubhouse attendants
supervisor, commissionaires

supervisor, security guards
supervisor, ski lift attendants
supervisor, theatre attendants
supervisor, ticket takers
tour guide supervisor
travel clerk supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Co-ordinate, assign and review the work of hotel, motel and other accommodation services clerks, theatre ushers and attendants, reservation clerks, sports and recreation club workers, commissionaires, and other service workers not elsewhere classified
- Establish work schedules and procedures and co-ordinate activities with other work units or departments
- Resolve work-related problems and prepare and submit progress and other reports
- Hire and train staff in job duties, safety procedures and company policies
- Requisition supplies and materials
- Ensure smooth operation of computer systems, equipment and machinery, and arrange for maintenance and repair work
- May perform the same duties as workers supervised.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college courses related to area supervised may be required.
- Experience in the occupation supervised is usually required.
- Certification or licensing may be required for some occupations in this group (i.e., supervisors of commissionaires or security guards).

Classified elsewhere

- *Accommodation Service Managers* (0632)
- *Cleaning Supervisors* (6215)
- *Dry Cleaning and Laundry Supervisors* (6214)
- *Executive Housekeepers* (6213)
- *Food Service Supervisors* (6212)
- *Other Services Managers* (0651)
- *Retail Trade Supervisors* (6211)

6221 Technical Sales Specialists – Wholesale Trade

Technical sales specialists, wholesale trade, sell a range of technical goods and services, such as scientific and industrial products, electricity, telecommunications services and computer services, to governments and to commercial and industrial establishments in domestic and international localities. They are employed by establishments that produce or provide technical goods and services, such as pharmaceutical companies, industrial equipment manufacturing companies, computer services firms, engineering firms and hydroelectric companies, or may be self-employed technical sales specialists/agents who contract their services to other companies. Technical sales specialists who are supervisors are included in this unit group.

Example titles

aircraft sales representative
communication equipment sales representative
construction equipment sales representative
electricity sales representative
heavy equipment sales representative
industrial supplies sales representative

medical instruments sales agent
sales engineer, technical support
software sales representative
technical sales representative
technical sales supervisor
technical support specialist

Main duties

Technical sales specialists perform some or all of the following duties:

- Promote sales to existing clients
- Identify and solicit potential clients
- Assess clients' needs and resources and recommend the appropriate goods or services
- Provide input into product design where goods or services must be tailored to suit clients' needs
- Develop reports and proposals as part of sales presentation to illustrate benefits from use of good or service
- Estimate costs of installing and maintaining equipment or service
- Prepare and administer sales contracts
- Consult with clients after sale to resolve problems and to provide ongoing support
- Troubleshoot technical problems related to equipment
- May train customers' staff in the operation and maintenance of equipment
- May conduct sales transactions through Internet-based electronic commerce
- May supervise the activities of other technical sales specialists.

Technical sales specialists usually specialize in a particular line of goods or services.

Employment requirements

- A university degree or college diploma in a program related to the product or service is usually required.

- Experience in sales or in a technical occupation related to the product or service may be required.
- Fluency in a specific foreign language, and/or foreign work or travel experience may be required for technical sales specialists seeking employment with companies that import or export technical goods or services.
- Technical sales supervisors require experience as a technical sales specialist.

Additional information

- Extensive company training programs for technical sales specialists may be provided by employers.
- Progression to sales management positions is possible with additional training or experience.

Classified elsewhere

- *Retail Salespersons and Sales Clerks* (6421)
- *Sales, Marketing and Advertising Managers* (0611)
- *Sales Representatives – Wholesale Trade (Non-Technical)* (6411)

6231 Insurance Agents and Brokers

Insurance agents and brokers sell life, automobile, property, health and other types of insurance to individuals, businesses and public institutions. Insurance agents are employed by individual insurance companies or are independent representatives of specific insurance companies. Insurance brokers are employed by brokerage firms, or may work in partnerships or hold sole proprietorship.

Example titles

insurance agent
insurance broker

insurance sales representative

Main duties

Insurance agents and brokers perform some or all of the following duties:

- Sell automobile, fire, health, life, property, marine, aircraft and other types of insurance to clients
- Establish client insurance coverage, calculate premiums and establish method of payment
- Provide information concerning group and individual insurance packages, the range of risk coverage, benefits paid and other policy features
- Ensure appropriate forms, medical examinations and other policy requirements are completed
- Monitor insurance claims and respond to clients' enquiries
- Identify and solicit potential clientele.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training and insurance industry courses and training programs are provided and are required for employment.
- Licensure by the insurance governing body in the province or territory of employment is required.

Additional information

- Progression to insurance management positions is possible through experience.
- Completion of educational programs through the Insurance Institute of Canada or its provincial counterpart entitles agents to professional recognition as an Associate of the Insurance Institute of Canada (A.I.I.C.) or Fellow of the Insurance Institute of Canada (F.I.I.C.).
- Completion of educational courses through the Canadian Association of Insurance and Financial Advisors allows for various levels of professional designations for insurance and financial advisors.

Classified elsewhere

- Insurance managers (in 0121 *Insurance, Real Estate and Financial Brokerage Managers*)
- *Insurance Underwriters* (1234)

6232 Real Estate Agents and Salespersons

Real estate agents and salespersons act as agents for the sale or purchase of houses, apartments, commercial buildings, land and other real estate and are employed in the real estate industry.

Example titles

commercial real estate agent

real estate agent

real estate broker

real estate sales representative

residential real estate agent

supervisor, real estate agents

Main duties

Real estate agents and salespersons perform some or all of the following duties:

- Solicit property sales listings from prospective vendors
- Assist vendors in selling property by establishing asking price, advertising the property, listing the property with listing services and conducting open houses for prospective buyers
- Assist prospective buyers in selecting, visiting, inspecting and making offers of purchase on real estate properties
- Advise clients on market conditions, prices, mortgages, legal requirements and related matters
- Draw up sales agreements for approval of purchaser and seller
- May rent or lease properties on behalf of clients.

Real estate agents and salespersons may specialize in residential, commercial, industrial/institutional or rural real estate sales.

Employment requirements

- Completion of secondary school is required.
- Completion of a real estate training course is required.
- Provincial or territorial licensure in the province or territory of employment is required.

Additional information

- Real estate agents and salespersons normally work on a commission basis.
- Real estate agents may operate independently by obtaining a broker's licence in accordance with the regulations of the province of employment. A broker's licence is required to become a manager in real estate.

Classified elsewhere

- *Assessors, Valuators and Appraisers* (1235)
- *Insurance, Real Estate and Financial Brokerage Managers* (0121)
- Mortgage brokers (in 1114 *Other Financial Officers*)
- Rental agents (in 1224 *Property Administrators*)
- Right-of-way agents (in 1225 *Purchasing Agents and Officers*)

6233 Retail and Wholesale Buyers

Retail and wholesale buyers buy merchandise for resale by retail and wholesale establishments and are usually responsible for the merchandising operations of retail and wholesale establishments. Retail and wholesale buyers who are supervisors and those who are assistants are included in this unit group.

Example titles

appliance buyer
assistant buyer
buyer – retail
buyer – wholesale
chief buyer

clothing buyer
food buyer
merchandiser
produce buyer
taster and buyer, beverages

Main duties

Retail and wholesale buyers perform some or all of the following duties:

- Purchase merchandise for resale by retail or wholesale establishments
- Review requirements of establishment and determine quantity and type of merchandise to purchase
- Study market reports, trade periodicals and sales promotion materials and visit trade shows, showrooms, factories and product design events
- Select the merchandise which best fits the establishment's requirements
- Interview suppliers and negotiate prices, discounts, credit terms and transportation arrangements
- Oversee distribution of merchandise to outlets and maintain adequate stock levels
- Establish and maintain contact with suppliers
- Supervise the work of other retail buyers.

Retail and wholesale buyers may specialize in a particular merchandise line.

Employment requirements

- Completion of secondary school is required.
- A university degree or college diploma in business, marketing or a related program is usually required.
- Previous work experience in retail or wholesale establishments is usually required.
- Supervisors and senior buyers require supervisory experience.

Additional information

- Retail and wholesale buyers may specialize through experience or product-related training courses.
- Progression to management positions in retail trade, sales, marketing or advertising is possible with additional training or experience.

Classified elsewhere

- *Purchasing Agents and Officers (1225)*

6234 Grain Elevator Operators

Grain elevator operators purchase grain from farmers, determine the grade, quality and weight of grain delivered, and maintain records for farmers and companies. They are employed by licensed grain elevator companies.

Example titles

assistant grain elevator manager
grain elevator district manager

grain elevator operator
primary grain elevator operator

Main duties

Grain elevator operators perform some or all of the following duties :

- Calculate grain quota from information supplied by farmers and the Canadian Wheat Board
- Record quota and subsequent deliveries of grain from individual farmers
- Examine grain samples and conduct tests to determine grade and quality of grain
- Purchase grain and arrange for transport or storage of grain
- Weigh and record type of grain received or in storage and report data to grain company and Canadian Wheat Board
- Supervise activities of workers who operate equipment to clean and move grain in the elevator and who load trucks and rail cars, or operate equipment themselves to perform these activities
- Act as a farm supply sales agent for fertilizers, insecticides, and other farm supplies
- Maintain proper operation of elevator equipment.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience working in a grain elevator are required.
- A pesticide dispenser's licence is required by licensed grain elevator operators.
- On-the-job training is provided.
- Grain elevator operators who sell pesticides require a dealer or vendor licence.

Additional information

- Progression from grain elevator manager to district manager is possible with experience.

Classified elsewhere

- Managers of grain terminal elevators (in 0721 *Facility Operation and Maintenance Managers*)

6241 Chefs

This unit group includes various types of chefs who plan and direct food preparation and cooking activities and who prepare and cook meals and specialty foods. They are employed in restaurants, hotels, hospitals and other health care institutions, central food commissaries, clubs and similar establishments, and on ships.

Example titles

chef	head chef
chef de cuisine	master chef
chef de partie	pastry chef
corporate chef	saucier
executive chef	sous-chef
executive sous-chef	specialist chef

Main duties

Executive chefs perform some or all of the following duties:

- Plan and direct food preparation and cooking activities of several restaurants in an establishment, restaurant chains, hospitals or other establishments with food services
- Consult with clients regarding weddings, banquets and specialty functions
- Plan menus and ensure food meets quality standards
- Estimate food requirements and may estimate food and labour costs
- Supervise activities of sous-chefs, specialist chefs, chefs and cooks
- Arrange for equipment purchases and repairs
- Recruit and hire staff
- May prepare and cook food on a regular basis, or for special guests or functions.

Sous-chefs perform some or all of the following duties:

- Supervise activities of specialist chefs, chefs, cooks and other kitchen workers
- Demonstrate new cooking techniques and new equipment to cooking staff
- May plan menus and requisition food and kitchen supplies
- May prepare and cook meals or specialty foods.

Chefs and specialist chefs perform some or all of the following duties:

- Prepare and cook complete meals or specialty foods, such as pastries, sauces, soups, salads, vegetables and meat, poultry and fish dishes, and create decorative food displays for special events such as banquets

- Instruct cooks in preparation, cooking, garnishing and presentation of food
- Create new recipes
- Supervise cooks and other kitchen staff
- May plan menus
- May requisition food and kitchen supplies.

Employment requirements

- Completion of secondary school is usually required.
- Cook's trade certification, which is available in all provinces and territories, or equivalent credentials, training and experience, are required.
- Executive chefs usually require management training and several years of experience in commercial food preparation, including two years in a supervisory capacity
and
Experience as a sous-chef, specialist chef or chef.
- Sous-chefs, specialist chefs and chefs usually require several years of experience in commercial food preparation.
- Interprovincial trade certification (Red Seal) for cooks is also available to qualified chefs.
- Chef de cuisine certification, administered by the Canadian Culinary Institute of the Canadian Federation of Chefs and Cooks (CFCC), is available to qualified chefs.

Additional information

- There is some mobility among the various types of chefs in this unit group.
- Executive chefs may progress to managerial positions in food preparation establishments.
- Red Seal trade certification allows for interprovincial mobility.

6241 Chefs

Classified elsewhere

- *Cooks* (6242)
- *Food Counter Attendants, Kitchen Helpers and Related Occupations* (6641)
- *Restaurant and Food Service Managers* (0631)

6242 Cooks

Cooks prepare and cook a wide variety of foods. They are employed in restaurants, hotels, hospitals and other health care institutions, central food commissaries, educational institutions and other establishments. Cooks are also employed aboard ships and at construction and logging campsites. Apprentice cooks are included in this unit group.

Example titles

apprentice cook	institutional cook
cook	journeyman/woman cook
dietary cook	licensed cook
first cook	line cook
grill cook	second cook
hospital cook	short order cook

Main duties

Cooks perform some or all of the following duties:

- Prepare and cook complete meals or individual dishes and foods
- Prepare and cook special meals for patients as instructed by dietitian or chef
- Schedule and supervise kitchen helpers
- Oversee kitchen operations
- Maintain inventory and records of food, supplies and equipment
- May set up and oversee buffets
- May clean kitchen and work area
- May plan menus, determine size of food portions, estimate food requirements and costs, and monitor and order supplies.
- May hire and train kitchen staff

Cooks may specialize in preparing and cooking ethnic cuisine or special dishes.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three-year apprenticeship program for cooks
 - or
 - Completion of college or other program in cooking
 - or
 - Several years of commercial cooking experience are required.
- Trade certification is available but voluntary in all provinces and Territories.
- Interprovincial trade certification (Red Seal) is also available to qualified cooks.

Additional information

- There is mobility among the various types of cooks in this group.
- Progression to supervisory or more senior positions, such as chef, is possible with experience and training.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Chefs* (6241)
- *Food Counter Attendants, Kitchen Helpers and Related Occupations* (6641)

6251 Butchers, Meat Cutters and Fishmongers – Retail and Wholesale

Butchers, meat cutters and fishmongers, retail and wholesale, prepare standard cuts of meat, poultry, fish and shellfish for sale in retail or wholesale food establishments. They are employed in supermarkets, grocery stores, butcher shops and fish stores or may be self-employed. Butchers who are supervisors or heads of departments are included in this group.

Example titles

butcher apprentice
butcher, retail
fishmonger – retail

head butcher – wholesale
meat cutter – retail or wholesale
supermarket meat cutter

Main duties

Butchers, meat cutters and fishmongers in this unit group perform some or all of the following duties:

- Cut, trim, and otherwise prepare standard cuts of meat, poultry, fish and shellfish for sale at self-serve counters or according to customers' orders
- Grind meats and slice cooked meats using powered grinders and slicing machines
- Prepare special displays of meat, poultry, fish and shellfish
- Shape, lace and tie roasts and other meats, poultry or fish and may wrap prepared meats, poultry, fish and shellfish
- Manage inventory, keep records of sales and determine amount, product line and freshness of products according to company and customer requirements
- Ensure food storage conditions are adequate
- May supervise other butchers, or meat cutters or fishmongers.

Employment requirements

- Completion of secondary school may be required.
- Completion of a college or other meat-and-fish-cutting training program, or a three-year meat cutting apprenticeship may be required.
- On-the-job training in food stores is usually provided for retail butchers, meat cutters and fishmongers.
- Trade certification is available, but voluntary, in Quebec and British Columbia.

Classified elsewhere

- Fish cutters (in 9463 *Fish Plant Workers*)
- *Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers* (9462)
- Seafood sales clerks (in 6421 *Retail Salespersons and Sales Clerks*)

6252 Bakers

Bakers prepare bread, rolls, muffins, pies, pastries, cakes and cookies in retail and wholesale bakeries and dining establishments. They are employed in bakeries, supermarkets, catering companies, hotels, restaurants, hospitals, and other institutions, or they may be self-employed. Bakers who are supervisors are included in this unit group.

Example titles

baker
baker apprentice

bakery supervisor
head baker

Main duties

Bakers perform some or all of the following duties:

- Prepare dough for pies, bread and rolls and sweet goods, and prepare batters for muffins, cookies, cakes, icings and frostings according to recipes or special customer orders
- Operate machinery
- Bake mixed doughs and batters
- Frost and decorate cakes or other baked goods
- Ensure quality of products meets established standards
- Draw up production schedule to determine type and quantity of goods to produce
- Purchase baking supplies
- May oversee sales and merchandising of baked goods
- May hire, train and supervise baking personnel and kitchen staff.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- or four-year apprenticeship program for bakers
or
Completion of a college or other program for bakers is usually required.
- On-the-job training may be provided.
- Trade certification is available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified bakers.

Additional information

- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Baking machine operators (in 9461 *Process Control and Machine Operators, Food and Beverage Processing*)
- Pastry chefs (in 6241 *Chefs*)

6261 Police Officers (Except Commissioned)

Police officers protect the public, detect and prevent crime and perform other activities directed at maintaining law and order. They are employed by municipal and federal governments, some provincial and regional governments and the armed forces. This unit group includes military police and railway police.

Example titles

community relations officer	police cadet
constable	police diver
crime prevention constable	police officer
detective	police sergeant
harbour police officer	railway police officer
highway patrol officer	RCMP officer
military police officer	

Main duties

Police officers perform some or all of the following duties:

- Patrol assigned areas to maintain public safety and order and to enforce laws and regulations
- Investigate crimes and accidents, secure evidence, interview witnesses, compile notes and reports and provide testimony in courts of law
- Arrest criminal suspects
- Provide emergency assistance to victims of accidents, crimes and natural disasters
- Participate in crime prevention, public information and safety programs
- May supervise and co-ordinate the work of other police officers.

Employment requirements

- Completion of secondary school is required.
- Completion of a college program or university degree in law and security or in the social sciences may be required.
- A three- to six-month police training program is provided.
- Physical agility, strength, fitness and vision requirements must be met, and psychological or other tests may also be required.
- Experience as a constable and the completion of specialized courses are required for detectives and sergeants.

Additional information

- Progression to commissioned police officer positions is possible with additional training and experience.

Classified elsewhere

- *By-Law Enforcement and Other Regulatory Officers, n.e.c. (6463)*
- *Commissioned Police Officers (0641)*
- Private detectives (in 6465 *Other Protective Service Occupations*)
- *Sheriffs and Bailiffs (6461)*

6262 Firefighters

Firefighters carry out firefighting and fire prevention activities, and assist in other emergencies. They are employed by municipal, provincial and federal governments and by large industrial establishments that have internal firefighting services.

Example titles

airport firefighter
fire captain
firefighter

firefighter, shipboard
industrial firefighter
lieutenant, firefighters

Main duties

Firefighters perform some or all of the following duties:

- Respond to fire alarms and other calls for assistance, such as automobile and industrial accidents, bomb threats and other emergencies
- Rescue victims from burning buildings and accident sites
- Control and extinguish fires using manual and power equipment, such as axes, water hoses, aerial ladders and hydraulic equipment and various firefighting chemicals
- Administer first aid and other assistance
- Ensure proper operation and maintenance of firefighting equipment
- Inform and educate the public on fire prevention
- Train to maintain high level of physical fitness
- Assist the public, the police and emergency organizations during times of major disasters
- May participate as members of a trauma or emergency response team and provide paramedical aid to accident victims or ill persons
- May supervise and co-ordinate the work of other firefighters.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a college program in fire protection technology or a related field may be required.
- Firefighting and emergency medical care training courses are provided and vary in length depending on the requirements of different fire departments or services.
- An apprenticeship training program for firefighters and voluntary trade certification is available in New Brunswick.

- Experience as a volunteer firefighter may be an advantage.
- Physical agility, strength, fitness and vision requirements must be met.
- Several years of experience are required for senior firefighters, such as lieutenants and captains.

Additional information

- Progression to senior positions such as fire chief is possible with additional training and several years of experience.

Classified elsewhere

- *Fire Chiefs and Senior Firefighting Officers* (0642)
- Forest firefighters (in 8422 *Silviculture and Forestry Workers*)
- Paramedics (in 3234 *Ambulance Attendants and Other Paramedical Occupations*)

6271 Hairstylists and Barbers

Hairstylists and barbers cut and style hair and perform related services. They are employed in hairstyling or hairdressing salons, barber shops, vocational schools, health care establishments and theatre, film and television establishments.

Example titles

barber
barber apprentice
hair colour technician
hairdresser

hairdresser apprentice
hairstylist
hairstylist apprentice
wig stylist

Main duties

Hairstylists perform some or all of the following duties:

- Suggest hair style compatible with client's physical features or determine style from client's instructions and preferences
- Cut, trim, taper, curl, wave, perm and style hair
- Apply bleach, tints, dyes or rinses to colour, frost or streak hair
- Analyze hair and scalp condition and provide basic treatment or advice on beauty care treatments for scalp and hair
- Clean and style wigs and hair pieces
- Apply hair extensions
- May shampoo and rinse hair
- May perform receptionist duties and order supplies
- May judge in competitions
- May train or supervise other hairstylists, hairstylist apprentices and helpers.

Barbers perform some or all of the following duties:

- Cut and trim hair according to client's instructions or preferences
- Shave and trim beards and moustaches
- May shampoo hair and provide other hair treatment, such as waving, straightening and tinting and may also provide scalp conditioning massages
- May book appointments and order supplies
- May train and supervise other barbers and barber apprentices.

Employment requirements

Hairstylists

- Some secondary school education is required.

- Completion of a two- or three-year hairstyling apprenticeship program or completion of a college or other program in hairstyling combined with on-the-job training is usually required.
- Several years of experience may replace formal education and training.
- Employers may require applicants to provide a hairstyling demonstration before being hired.
- There are various provincial/territorial certification and licensing requirements for hairstylists, ranging from trade certification to licensing by a provincial/territorial association. Interprovincial trade certification (Red Seal) is also available for qualified hairstylists.

Barbers

- Some secondary school education is required.
- Completion of a two-year apprenticeship or other barber program is usually required.
- On-the-job training may be substituted for formal education.
- There are various provincial/territorial certification and licensing requirements for barbers, ranging from trade certification to licensing by a provincial/territorial association.
- Barbers can also obtain interprovincial trade certification (Red Seal) as qualified hairstylists.

Additional information

- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Estheticians, Electrologists and Related Occupations* (6482)
- Hairdressing teachers (in 4131 College and Other Vocational Instructors)

6272 Funeral Directors and Embalmers

Funeral directors co-ordinate and arrange all aspects of funeral services. Embalmers prepare the remains of deceased persons for public visitation and burial. Funeral directors and embalmers are employed by funeral homes.

Example titles

apprentice embalmer
embalmer

funeral director
mortician

Main duties

Funeral directors perform some or all of the following duties:

- Consult with the family of the deceased regarding the nature of the funeral service, the disposition of the remains and funeral costs
- Transfer, or arrange for the transfer of, the remains from the place of death to the funeral home
- Inform survivors of benefits for which they may be eligible
- Issue death notices to newspapers
- Oversee the preparation of the remains, plan and schedule funeral services, co-ordinate burials and cremations and complete legal documents
- Discuss and negotiate prearranged funerals with clients
- Manage funeral home operations including hiring and directing staff, maintaining financial records, preparing accounts and ordering merchandise
- Supervise embalmers, funeral home attendants and other funeral home staff
- May perform same duties as embalmers.

Embalmers perform some or all of the following duties:

- Preserve, sanitize and prepare human remains for funeral services
- Perform cosmetic and restorative work on human remains
- Supervise funeral home attendants and other funeral home staff.

Employment requirements

- Completion of a one- to two-year college program and a twelve- to twenty-month practical apprenticeship program during or following the educational program is usually required for funeral directors.

- Completion of a two- to three-year college program and a twelve- to twenty-month practical apprenticeship program during or following the educational program
 - or
- Completion of a three-year college program is required for embalmers.
- Funeral directors require licensure in most provinces and territories.
- Funeral directors may be required to be licensed embalmers depending on provincial requirements.
- Embalmers require licensure in all provinces.

Classified elsewhere

- Bereavement counsellors (in 4153 *Family, Marriage and Other Related Counsellors*)
- Funeral home attendants (in 6683 *Other Elemental Service Occupations*)
- Funeral service general managers (in 0015 *Senior Managers – Trade, Broadcasting and Other Services, n.e.c.*)

6411 Sales Representatives – Wholesale Trade (Non-Technical)

Sales representatives, wholesale trade (non-technical), sell non-technical goods and services to retail, wholesale, commercial, industrial, professional and other clients domestically and internationally. They are employed by establishments that produce or provide goods and services such as petroleum companies, food, beverage and tobacco producers, clothing manufacturers, motor vehicles and parts manufacturers, hotels, business services firms, and transportation companies. Auctioneers are included in this unit group. Sales representatives, wholesale trade who are supervisors are also included in this unit group.

Example titles

food products sales representative
freight sales agent
graphic design sales representative
hotel accommodations sales executive
liquor sales representative
magazine sales representative

oil distributor
periodicals sales representative
security services sales consultant
supervisor, wholesale trade representatives
transfer company agent

Main duties

Sales representatives, wholesale trade (non-technical), perform some or all of the following duties:

- Promote sales to existing clients
- Identify and solicit potential clients
- Provide clients with presentations on the benefits and uses of goods or services
- Estimate or quote prices, credit or contract terms, warranties and delivery dates
- Prepare or oversee preparation of sales or other contracts
- Consult with clients after sale or signed contracts to resolve problems and to provide ongoing support
- Review and adapt to information regarding product innovations, competitors and market conditions
- Represent companies that export and import products or services to and from foreign countries
- May conduct sales transactions through Internet-based electronic commerce
- May supervise the activities of other sales representatives.

- Fluency in a foreign language and/or foreign country work or travel experience may be required for sales representatives seeking employment with companies that import or export goods or services.
- Supervisors and senior sales representatives require experience.
- Voluntary certification is available from the Canadian Professional Sales Association.

Additional information

- Progression to sales management positions is possible with additional training or experience.

Classified elsewhere

- *Retail Salespersons and Sales Clerks* (6421)
- Royalties manager (in 0512 Managers – Publishing, Motion Pictures, Broadcasting and Performing Arts)
- *Sales, Marketing and Advertising Managers* (0611)
- *Technical Sales Specialists – Wholesale Trade* (6221)

Employment requirements

- Completion of secondary school is required.
- A university degree or completion of a college or other program may be required.
- Experience in sales or in an occupation related to the product or service is usually required.

6421 Retail Salespersons and Sales Clerks

Retail salespersons and sales clerks sell, rent or lease a range of technical and non-technical goods and services directly to consumers. They are employed by stores and other retail businesses, as well as wholesale businesses that sell on a retail basis to the public.

Example titles

audio equipment salesperson
automobile salesperson
car rental agent
clothing salesperson
computer salesperson – retail
counter clerk – retail
department store clerk

furniture salesperson
hardware store clerk
jewellery salesperson
retail sales associate
retail sales clerk
retail salesperson

Main duties

Retail salespersons and sales clerks perform some or all of the following duties:

- Greet customers and discuss type, quality and quantity of merchandise or services sought for purchase, rental or lease
- Advise customers on use and care of merchandise, and provide advice concerning specialized products or services
- Estimate or quote prices, credit terms, trade-in allowances, warranties and delivery dates
- Prepare merchandise for purchase, rental or lease
- Prepare sales, rental or leasing contracts and accept cash, cheque, credit card or automatic debit payment
- Assist in display of merchandise
- Maintain sales records for inventory control
- Operate computerized inventory record keeping and re-ordering systems
- May conduct sales transactions through Internet-based electronic commerce.

Retail salespersons may specialize and act as consultants in interior decorating, home entertainment systems, computers and other products and services.

Employment requirements

- Completion of secondary school may be required.
- A university degree or college diploma may be required by some employers.
- Specific subject matter courses or training may be required.

- Demonstrated sales ability and product knowledge are usually required for retail salespersons who sell complex or valuable merchandise, such as automobiles, antiques or computers.

Additional information

- Technical or sales training programs may be provided by employers.
- Progression to retail supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Cashiers (6611)*
- *Retail stock clerks (in 6622 Grocery Clerks and Store Shelf Stockers)*
- *Sales clerk supervisors (in 6211 Retail Trade Supervisors)*

6431 Travel Counsellors

Travel counsellors advise clients on travel options and tour packages, make bookings and reservations, prepare tickets and receive payment. They are employed in travel agencies, transportation and tourism firms and hotel chains.

Example titles

travel agent

travel counsellor

travel consultant

Main duties

Travel counsellors perform some or all of the following duties:

- Provide travel information to clients regarding destinations, transportation and accommodation options and travel costs, and recommend suitable products
- Plan and organize vacation travel for individuals or groups
- Make transportation and accommodation reservations using computerized reservation and ticketing system
- Sell single fare tickets and package tours to clients
- Promote particular destinations, tour packages and other travel services
- Investigate new travel destinations, hotels and other facilities and attractions
- Provide travel tips regarding tourist attractions, foreign currency, customs, languages and travel safety.

Employment requirements

- Completion of secondary school is usually required.
- A college diploma or vocational training in travel or tourism is usually required.
- Certification with the Canadian Institute of Travel Counsellors (CITC) may be required. This certification is granted after completion of a 60 credit requirement obtained through any combination of work experience, training and education, and successful completion of the advanced exam.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- Airline ticket agents (in 6433 *Airline Sales and Service Agents*)
- Convention co-ordinators (in 1226 *Conference and Event Planners*)
- Travel agency managers (in 0621 *Retail Trade Managers*)

6432 Pursers and Flight Attendants

Airline pursers and flight attendants ensure the safety and comfort of passengers and crew members during flights. Ship pursers attend to the safety and comfort of passengers aboard ships. Airline pursers and flight attendants are employed by airline companies. Ship pursers are employed by tour or cruise boat companies.

Example titles

customer service director
flight attendant
flight service director

passenger service director
purser, airline
ship purser

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Flight attendants greet passengers, explain and demonstrate safety procedures, check the general condition of the aircraft cabin, ensure that all necessary supplies are on board, attend to safety of passengers during take-offs, landings and emergencies, serve food and beverages to passengers and make flight announcements.
- Flight pursers, customer service directors and passenger service directors co-ordinate the activities of flight attendants, provide service to passengers during flight and complete reports.
- Ship pursers supervise ship attendants, arrange activities for passengers and conduct ship's business, such as signing on crew, maintaining payroll records, assisting passengers in preparing customs declarations and supervising baggage storage.

Employment requirements

- Flight attendants and flight pursers require the completion of secondary school and a Transport Canada approved training program.
- Flight pursers/customer service directors require experience as a flight attendant.
- Ship pursers may require experience as a ship attendant.
- Flight attendants and ship pursers usually require experience working with the public.

Additional information

- There is little mobility between airline pursers and ship pursers.
- It is an advantage for pursers and flight attendants to speak more than one language.

Classified elsewhere

- Food and beverage servers on trains (in 6453 *Food and Beverage Servers*)
- Ship and rail service attendants (in 6672 *Other Attendants in Accommodation and Travel*)

6433 Airline Sales and Service Agents

Airline sales and service agents issue tickets, provide fare quotations, make reservations, conduct passenger check-in, trace missing baggage, arrange for cargo shipments and perform other related customer service duties to assist airline passengers. Airline sales and service agents are employed by airline companies. Load planners, who plan the positioning of cargo on aircraft, are also included in this unit group.

Example titles

airline baggage agent
airline cargo agent
baggage tracer, airline
client service representative – airline
counter services agent, airline
customer service agent, airline

load planner, airline
passenger agent, airline
passenger service representative
reservation agent, airline
station agent, airline
ticket agent, airline

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Airline passenger and ticket agents help customers plan travel time and routes, prepare and issue tickets, assign seats, prepare boarding passes, check baggage, attend boarding gates, assist pre-boarding passengers and provide information on fares and flight schedules and routes.
- Airline baggage agents trace lost, delayed or misdirected baggage for customers.
- Airline cargo agents weigh cargo and compute freight costs, calculate charges for services and insurance, process bills of lading, cargo manifests and other documents, trace lost or misdirected cargo and maintain shipping and other records.
- Airline reservation agents reserve seats for tour companies, travel agencies, wholesalers and the general public using computerized systems, provide information on airline passengers and process mileage points.
- Airline station agents complete pre-flight documents regarding passenger and cargo load, catering count, special requests and other flight information and relay operational messages to operations control and downline stations. They also perform duties of ticket, baggage and cargo agents.
- Airline load planners calculate load weights for compartments of aircraft using charts and computers and plan load to distribute and balance cargo.

Employment requirements

- Completion of secondary school is usually required.
- Several weeks of on-the-job and classroom training are provided for all occupations in this unit group.
- Airline station agents usually require experience as a ticket, baggage or cargo agent.
- Load planners require a restricted radio operator's licence and usually require airline operations experience.

Additional information

- Progression to supervisory positions is possible with experience.
- Depending on the size of the airline or airport, the duties of workers in this unit group may overlap.

Classified elsewhere

- Airline cargo and baggage handlers (in *7437 Air Transport Ramp Attendants*)
- Supervisors of airline sales and service agents (in *6216 Other Service Supervisors*)
- *Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)* (6434)
- *Travel Counsellors* (6431)

6434 Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)

Ticket agents, cargo service representatives and related clerks (except airline), quote fares and rates, make reservations, issue tickets, process cargo shipment, check baggage and perform other related customer service duties to assist travellers. They are employed by bus and railway companies, freight forwarding and shipping companies, boat cruise operators and other public transit establishments and by travel wholesalers.

Example titles

bus ticket agent

cargo customer service representative

counter service agent, railway

railway passenger agent

reservations clerk, railway

ticket agent (except airline)

Main duties

Ticket agents in this unit group perform some or all of the following duties:

- Answer customer inquiries, quote fares and assist clients in planning travel times and routes
- Reserve seats for tour companies, travel agencies, wholesalers and the general public
- Issue tickets, handle cash transactions and check baggage
- Receive and record bookings for package tours from retail travel agencies and supply information regarding available vacancies when working for wholesale travel companies.

Cargo service representatives in this unit group perform some or all of the following duties:

- Quote fare and rates for cargo shipment
- Compute shipment costs including charges for services and insurance using rate tables and schedules and prepare and maintain shipping and other documents
- Check in passenger baggage and sort for loading by baggage handlers or may load baggage directly into buses, railway cars or cruise ships
- Trace lost or misdirected passenger baggage or cargo shipment.

Employment requirements

- Completion of secondary school is usually required.
- Up to 10 weeks of training may be provided.

Additional information

- Ticket agents and cargo service representatives may perform the same duties depending on the size and location of the operations.
- Progression to supervisory positions is possible through experience.

Classified elsewhere

- *Airline Sales and Service Agents (6433)*
- *Baggage handlers in rail, marine and motor transportation (in 6672 Other Attendants in Accommodation and Travel)*
- *Supervisors of ticket and cargo agents and related clerks in this unit group (in 6216 Other Service Supervisors)*
- *Travel Counsellors (6431)*

6435 Hotel Front Desk Clerks

Hotel front desk clerks make room reservations, provide information and services to guests and receive payment for services. They are employed by hotels, motels and resorts.

Example titles

front desk clerk, hotel
front office clerk, hotel
guest service agent
guest service representative

hotel front desk clerk
night clerk
reservations clerk – hotel
room clerk

Main duties

Hotel front desk clerks perform some or all of the following duties:

- Maintain an inventory of vacancies, reservations and room assignments
- Register arriving guests and assign rooms
- Answer enquiries regarding hotel services and registration by letter, by telephone and in person, provide information about services available in the community and respond to guests' complaints
- Compile and check daily record sheets, guest accounts, receipts and vouchers using computerized or manual systems
- Present statements of charges to departing guests and receive payment.

Employment requirements

- Completion of secondary school or equivalent is usually required.
- Completion of a two-year apprenticeship program, or a college program in front desk operations or hotel management may be required.
- Guest service trade certification is available, but voluntary, in all provinces and the Yukon from the Tourism Education Council.

Additional information

- Progression to senior positions such as accommodations manager is possible with additional training and experience.

Classified elsewhere

- *Other Attendants in Accommodation and Travel* (6672)
- *Travel Counsellors* (6431)

6441 Tour and Travel Guides

Tour and travel guides escort individuals and groups on trips, on sightseeing tours of cities and on tours of historical sites and establishments such as famous buildings, manufacturing plants, cathedrals and theme parks. They also provide descriptions and background information on interesting features. Tour and travel guides are employed by tour operators, resorts and other establishments or may be self-employed.

Example titles

adventure travel site interpreter
calèche driver
factory tour guide
industrial site interpreter

sightseeing guide
tour guide
tourist guide
travel guide

Main duties

Tour guides perform some or all of the following duties:

- Transport or escort individuals or groups on tours of cities, waterways and industrial and other establishments
- Describe points of interest, answer questions and supply information
- Provide historical and cultural facts related to the site
- May collect admission fees and sell souvenirs.

Travel guides perform some or all of the following duties:

- Escort individuals and groups on vacation and business trips
- Ensure that reservations for transportation and accommodations are confirmed and that prepared itineraries are met
- Visit and describe points of interest and plan and carry out recreational activities
- Resolve problems with itineraries, service and accommodations.

Employment requirements

- On-the-job training is provided.
- Knowledge of both official languages or an additional language may be required for some positions in this group.

Classified elsewhere

- Museum guides and historical and heritage interpreters (in 5212 *Technical Occupations Related to Museums and Art Galleries*)
- *Outdoor Sport and Recreational Guides* (6442)
- Tour operators (in 0621 *Retail Trade Managers*)

6442 Outdoor Sport and Recreational Guides

Outdoor sport and recreational guides organize and conduct trips or expeditions for sports enthusiasts, adventurers, tourists and resort guests. They are employed by private companies and resorts or may be self-employed.

Example titles

canoeing guide
dude wrangler
fishing guide
hot air balloonist

hunting guide
mountain climbing guide
outfitter
rafting guide

Main duties

Outdoor sport and recreational guides perform some or all of the following duties:

- Plan itinerary for trip or expedition and arrange transportation or transport individuals or group to site
- Assemble necessary equipment and supplies, such as camping gear, rafts, life jackets, fishing tackle and food
- Lead or escort individuals or groups and advise on safety and emergency measures, techniques and the use of equipment
- Provide instruction for activities such as canoeing, rafting and mountain climbing
- Advise on specific regulations such as hunting and fishing laws and boating regulations, follow environmental guidelines and prevent violations
- Provide first aid in emergency situations
- May prepare meals for group and set up camp.

Employment requirements

- Knowledge of a particular terrain or body of water, demonstrated ability in the guided activity and relevant licences are required for employment in this group.
- Hot air balloon pilots require completion of 10 hours of ground school, 16 hours of pilot-in-command experience and federal licensure.
- Certification in first aid and CPR (cardiopulmonary resuscitation) may be required.

Additional information

- Outdoor sport and recreational guides usually work on a seasonal basis.

Classified elsewhere

- *Program Leaders and Instructors in Recreation, Sport and Fitness (5254)*
- *Tour and Travel Guides (6441)*

6443 Casino Occupations

Gambling casino workers operate gaming tables, maintain slot machines, accept keno wagers, pay out winning bets and jackpots and collect losing bets. They are employed by gambling casinos. Supervisors of gambling casino workers are included in this unit group.

Example titles

croupier
gambling dealer, casino
keno runner, casino
keno writer
pit boss, gambling casino

shift manager, gambling casino
slot machine attendant, gambling casino
slot supervisor
supervisor, gaming tables

Main duties

Gambling casino workers perform some or all of the following duties:

- Operate gaming tables and games such as roulette, blackjack, keno, baccarat and poker
- Explain rules of games to patrons and ensure that rules are followed
- Accept keno wagers and issue computerized tickets for selection
- Determine winners or announce winning numbers
- Calculate and pay out winning bets and jackpots, collect losing bets and maintain related reports
- Fill slot machines with coins and assist patrons experiencing difficulties with machines
- Perform minor adjustments to slot machines.

Gambling casino supervisors perform some or all of the following duties:

- Supervise the activities of casino workers
- Co-ordinate and schedule activities of staff working at gaming tables and slot machines
- Train casino staff
- Resolve problems that arise, such as patrons' complaints and work-related issues.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training is provided for gaming table dealers.
- Gambling casino supervisors usually require experience in all gambling activities.
- Security clearance is required for all gambling casino workers.
- Casino gaming licences are usually required for all casino employees.

Classified elsewhere

- Amusement ride, sports facility and bingo hall workers (in 6671 *Operators and Attendants in Amusement, Recreation and Sport*)
- Supervisors of attendants in recreation and sport (in 6216 *Other Service Supervisors*)

6451 Maîtres d'hôtel and Hosts/Hostesses

Maîtres d'hôtel and hosts/hostesses greet patrons and escort them to tables, and supervise and co-ordinate the activities of food and beverage servers. They are employed in restaurants, hotel dining rooms, private clubs, cocktail lounges and similar establishments.

Example titles

host/hostess, food service
maître d'

maître d'hôtel
restaurant host/hostess

Main duties

Maîtres d'hôtel and hosts/hostesses perform some or all of the following duties:

- Receive and record patrons' reservations and assign tables
- Greet patrons at entrance of dining room, restaurant, or lounge and escort them to tables or other seating areas
- Speak with patrons to ensure satisfaction with food and service, and attend to complaints
- Order necessary dining room supplies and equipment
- Inspect dining and serving areas and equipment
- Supervise and co-ordinate activities of food and beverage servers and other serving staff
- Accept payment from patrons for food and beverage
- Maintain financial statements and records and ensure safe-keeping
- Prepare work schedules and payrolls
- Interview candidates for food and beverage server positions and train new employees
- May be responsible for marketing and advertising the dining establishment.

Employment requirements

- Completion of secondary school is usually required.
- Several weeks of on-the-job training are usually required.
- Maîtres d'hôtel require experience as a formal or captain waiter/waitress or other food service experience.

Classified elsewhere

- *Food and Beverage Servers (6453)*
- *Food Service Supervisors (6212)*

6452 Bartenders

Bartenders mix and serve alcoholic and non-alcoholic beverages. They are employed in restaurants, hotels, bars, taverns, private clubs, banquet halls and other licensed establishments. Supervisors of bartenders are included in this unit group.

Example titles

bar attendant
barkeeper

bartender
head bartender

Main duties

Bartenders perform some or all of the following duties:

- Take beverage orders from serving staff or directly from patrons
- Mix liquor, soft drinks, water and other ingredients to prepare cocktails and other drinks
- Prepare mixed drinks, wine, draft or bottled beer and non-alcoholic beverages for food and beverage servers or serve directly to patrons
- Collect payment for beverages and record sales
- Maintain inventory and control of bar stock and order supplies
- Clean bar area and wash glassware
- Ensure compliance with provincial/territorial liquor legislation and regulations
- May train and supervise other bartenders and bar staff
- May hire and dismiss staff.

Employment requirements

- Completion of secondary school may be required.
- Completion of college or other program in bartending
 - or*
 - Completion of courses in mixing drinks is usually required.
- Responsible beverage service certification may be required.

Additional information

- Progression to managerial positions in food and beverage service is possible with experience.

Classified elsewhere

- *Food and Beverage Servers (6453)*

6453 Food and Beverage Servers

Food and beverage servers take patrons' food and beverage orders and serve orders to patrons. They are employed in restaurants, hotels, bars, taverns, private clubs, banquet halls and similar establishments.

Example titles

banquet server	food and beverage server
captain waiter/waitress	formal service waiter/waitress
chief wine steward	waiter/waitress
cocktail waiter/waitress	wine steward

Main duties

Food and beverage servers perform some or all of the following duties:

- Greet patrons, present menus, make recommendations and answer questions regarding food and beverages
- Take orders and relay to kitchen and bar staff
- Recommend wines that complement patrons' meals
- Serve food and beverages
- Prepare and serve specialty foods at patrons' tables
- Present bill to patrons and accept payment
- Order and maintain inventory of wines and wine glassware
- Perform sensory evaluation of wines.

Employment requirements

- Completion of secondary school may be required.
- Formal waiters/waitresses may require completion of a one- or two-year apprenticeship program
 - or*
 - College or vocational school courses.
- Apprenticeship training programs for food and beverage servers are available in Saskatchewan and British Columbia. Trade certification is available but voluntary in those provinces.
- On-the-job training is usually provided.
- Wine stewards may require courses in wine selection and service
 - or*
 - Experience as a captain waiter/waitress or formal waiter/waitress.

Classified elsewhere

- *Maîtres d'hôtel and Hosts/Hostesses* (6451)
- *Restaurant and Food Service Managers* (0631)

6461 Sheriffs and Bailiffs

Sheriffs execute and enforce court orders, warrants and writs, participate in seizure and sale of property and perform courtroom and other related duties. Bailiffs serve legal orders and documents, seize or repossess properties, evict tenants and perform other related activities. Sheriffs and bailiffs are employed by provincial or territorial courts, and bailiffs may be employed as officers of the court or in private service as agents for creditors.

Example titles

bailiff	sheriff's bailiff
deputy sheriff	sheriff's officer
sheriff	

Main duties

Sheriffs and bailiffs perform some or all of the following duties:

- Serve statements of claims, summonses, warrants, jury summonses, orders to pay alimony, and other court orders
- Serve writs of execution by seizing and selling property and distributing the proceeds according to court decisions
- Locate property and make seizures and removals under various acts of Parliament
- Provide courthouse security for judges and perimeter security for the courthouse
- Escort prisoners to and from courts and correctional institutions
- Prepare comprehensive reports and affidavits and maintain records
- Attend court, escort witnesses and assist in maintaining order
- Provide security support for sequestered juries
- Issue warrants for imprisonment, arrest or apprehension.

Employment requirements

- Completion of secondary school is usually required.
- A college diploma in legal studies may be required.
- Sheriffs require experience as a deputy sheriff or bailiff and/or in custodial/escort or security work.
- Bailiffs usually require some work experience related to law enforcement as well as knowledge of relevant statutes and laws.
- Membership in the provincial regulatory body is mandatory in Quebec.

Additional information

- Progression to supervisory positions is possible with additional experience and in-house training.

Classified elsewhere

- *Correctional Service Officers* (6462)
- *Court Clerks* (1443)
- *Police Officers (Except Commissioned)* (6261)

6462 Correctional Service Officers

Correctional service officers guard prisoners and detainees and maintain order in correctional institutions and other places of detention. They are employed by federal, provincial and municipal governments.

Example titles

correctional facility guard
correctional service officer
detention attendant

prison guard
supervisor, correctional officers

Main duties

Correctional service officers perform some or all of the following duties:

- Observe conduct and behaviour of prisoners to prevent disturbances and escapes
- Supervise prisoners during work assignments, meals and recreation periods
- Patrol assigned area and report any problems to supervisor
- Observe behaviour of prisoners and prepare reports
- Escort prisoners in transit and during temporary leaves
- Prepare admission, program, release, transfer and other reports
- May supervise and co-ordinate work of other correctional service officers.

Classified elsewhere

- Detention home workers (in 4212 *Community and Social Service Workers*)
- *Managers in Social, Community and Correctional Services* (0314)
- *Social Workers* (4152)

Employment requirements

- Completion of secondary school is required.
- Correctional officer recruits must successfully complete the Corrections Canada training course to be employed by federal institutions.
- Correctional officer recruits are usually required to complete a basic training course to be employed by provincial/territorial institutions.
- Correctional service supervisors require experience as a correctional service officer.

6463 By-Law Enforcement and Other Regulatory Officers, n.e.c.

Officers and inspectors in this unit group enforce by-laws and regulations of provincial and municipal governments. They are employed by provincial and municipal governments and agencies.

Example titles

animal control officer
by-law enforcement officer
commercial transport inspector
garbage collection inspector
liquor licence inspector

parking control officer
property standards inspector
taxi inspector
zoning inspector

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Animal control officers respond to citizen complaints concerning stray domestic animals, livestock and wildlife; issue warnings and citations to owners; and impound lost, homeless and dangerous animals.
- By-law enforcement officers enforce municipal and provincial regulations, investigate complaints, and issue warnings and citations to commercial and residential property owners and occupants.
- Commercial transport inspectors inspect commercial vehicles to ensure compliance with regulations governing load restrictions, the transportation of hazardous materials and public safety.
- Garbage collection inspectors investigate complaints concerning infractions of garbage collection by-laws.
- Liquor licence inspectors conduct inspections of licensed establishments, advise licencees on laws and regulations, and report contravention of laws and regulations to provincial liquor control boards and agencies.
- Parking control officers enforce parking by-laws on city streets, regional roads and municipal properties.
- Taxi inspectors inspect taxicabs for mechanical reliability, cleanliness, licensing and meter accuracy; investigate public complaints, issue citations and prepare reports; and give evidence to city councils, taxi commissions and in court.
- Zoning inspectors investigate properties in violation of zoning and related by-laws, after receiving requests for licence clearances pertaining to zoning and related by-laws, and on receipt of building permit applications.

By-law enforcement officers may specialize in the enforcement of one specific by-law.

Employment requirements

- Completion of secondary school is required.
- Completion of a college program or courses in law and security or other related field
 - or
 - Experience in a related administrative or regulatory occupation is usually required.
- Zoning inspectors or zoning enforcement officers may require a college diploma as a civil engineering or architectural technologist or technician and several years of experience in enforcement and/or building construction or a related field.
- On-the-job training is provided.

Classified elsewhere

- *Engineering Inspectors and Regulatory Officers* (2262)
- *Immigration, Employment Insurance and Revenue Officers* (1228)
- *Inspectors in Public and Environmental Health and Occupational Health and Safety* (2263)
- *Other Protective Service Occupations* (6465)
- *Police Officers (Except Commissioned)* (6261)
- *Sheriffs and Bailiffs* (6461)

6464 Occupations Unique to the Armed Forces

This unit group includes personnel in occupations unique to the armed forces, such as artillery soldiers, infantry soldiers, air defence technicians and naval electronics technicians who provide collective defence measures to protect Canadian waters, land, airspace and other interests. They are employed by the Canadian armed forces.

Example titles

air defence technician

armoured vehicle crewmember

artillery soldier

field engineer – military

infantry soldier

naval weapons technician

sonar operator

tank driver

weapons operator

Main duties

Personnel in occupations unique to the armed forces perform some or all of the following duties:

- Operate armoured vehicles, artillery, hand-held weapons and other military combat equipment and defence systems
- Engage in peacekeeping operations and enforce cease-fire agreements
- Provide aid in emergency situations, such as civil disorder, natural disasters and major accidents
- Engage in drills and other training in preparation for peacekeeping, combat and natural disaster relief duties
- Perform administrative and guard duties.

Personnel in this unit group are assigned to specific operations related to reconnaissance, peacekeeping, disaster relief and combat.

Employment requirements

- Completion of secondary school is usually required.
- Three months of basic military training are provided.
- Specialized training in the operation and maintenance of military equipment and systems is provided.

Additional information

- Progression to commissioned officer occupations is possible with additional training and experience.
- Data provided by Statistics Canada for Occupations Unique to the Armed Forces (6464) includes all non-commissioned armed forces personnel. For further information, see Introduction to the NOC.

Classified elsewhere

• *Commissioned Officers, Armed Forces (0643)*
Occupations in the armed forces for which there are civilian counterparts are classified with those occupations. For example:

- Military police officers (in 6261 *Police Officers (Except Commissioned)*)
- Musicians – military (in 5133 *Musicians and Singers*)
- Vehicle technicians – military (in 7321 *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers*)

6465 Other Protective Service Occupations

This unit group includes workers who conduct private investigations for clients or employers, implement security measures to protect property against theft and fire and provide other protective services not elsewhere classified. They are employed by security and investigation service companies, hotels, retail establishments, businesses and industry, or they may be self-employed.

Example titles

alarm investigator

corporate security officer

house detective

postal inspection officer

private investigator

retail loss prevention officer

security officer, private

store detective

theft prevention officer

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Corporate security officers investigate unlawful acts of employees or patrons of establishments and recommend security systems such as electronic detection devices and access devices.
- Private investigators conduct investigations to locate missing persons and obtain information for use in civil and criminal litigation matters or for other purposes; they may also conduct polygraph tests (integrity surveys) for clients.
- Retail loss prevention officers prevent and detect shoplifting and theft in retail establishments.

Classified elsewhere

- *Police Officers (Except Commissioned)* (6261)
- *Security Guards and Related Occupations* (6651)
- Systems security analysts (in *2171 Information Systems Analysts and Consultants*)

Employment requirements

- Completion of secondary school is required.
- A college diploma in law and security or police technology may be required.
- On-the-job training may be provided.
- Experience as a police officer may be required for corporate security officers.
- Provincial licensure is required for private investigators.
- In Quebec, a permit issued by the Sûreté du Québec is required to work as a detective or security officer.

6471 Visiting Homemakers, Housekeepers and Related Occupations

Visiting homemakers provide ongoing or short-term home support services for individuals and families during periods of incapacitation, convalescence or family disruption. They are employed by government, non-profit and home care agencies, or are self-employed. Housekeepers perform housekeeping and other home management duties in private households, embassies and other residential establishments. Companions provide elderly and convalescent clients with companionship and personal care in residential settings. They are employed by home care agencies or may be self-employed. Foster parents care for children or family members in their homes under the direction of a foster parent agency.

Example titles

companion
foster parent
home support worker
housekeeper

personal aide
personal care attendant – home care
respite worker – home support
visiting homemaker

Main duties

Visiting homemakers perform some or all of the following duties:

- Care for individuals and families during periods of incapacitation, convalescence or family disruption
- Administer bedside and personal care to clients such as aid in ambulation, bathing, personal hygiene, and dressing and undressing
- Plan and prepare meals and special diets, and feed or assist in feeding clients
- Demonstrate infant care to new parents
- May perform routine health-related duties such as changing non-sterile dressings, administering medications and collecting specimens under the general direction of home care agency supervisor or nurse
- May perform routine housekeeping duties such as laundry, washing dishes and making beds.

Housekeepers perform some or all of the following duties:

- Perform housekeeping and other home management duties under general direction of employer
- Plan and prepare meals independently or with employer, and may serve meals
- May care for children.

Companions perform some or all of the following duties:

- Provide elderly and convalescent clients with companionship and personal care in client's home under general direction of home care agency supervisor or family members

- Aid clients with ambulation, bathing and other aspects of personal hygiene.

Foster parents perform some or all of the following duties:

- Care for foster children, usually on an emergency or temporary basis, as family members under general direction of foster parent agency
- Consult foster parent agency supervisors for advice and when problems arise
- Administer therapeutic programs for foster children, as directed by foster agency social workers.

Employment requirements

- Some secondary school education is usually required.
- Child-care or home management experience may be required.
- Visiting homemakers may require college or other courses in home support.
- First aid certification may be required.

Additional information

- There is mobility among the occupations in this group.

Classified elsewhere

- *Babysitters, Nannies and Parents' Helpers*
(6474)

6472 Elementary and Secondary School Teacher Assistants

This unit group includes workers who assist elementary and secondary school teachers and counsellors. They are employed in public and private elementary and secondary schools, special schools and treatment centres.

Example titles

educational assistant	special education assistant
educational resources assistant	staff assistant, education
lunch room supervisor	teacher's aide
program assistant, education	teacher's assistant
secondary school teacher's assistant	

Main duties

Elementary and secondary school teacher assistants perform some or all of the following duties:

- Assist students with lessons under direct supervision of classroom teacher
- Monitor and report to classroom teacher on student progress
- Assist in preparation of learning materials and environment
- Accompany and supervise students during activities in school gymnasiums, laboratories, libraries, resource centres and on field trips
- Assist special needs students, such as those with mental or physical disabilities, with mobility, communication and personal hygiene
- Prepare classroom displays and bulletin boards
- Operate or assist teacher in operation of projectors, tape recorders and other audio-visual equipment and office equipment such as photocopier, fax machine and computer
- Carry out behaviour modification, personal development and other therapeutic programs under supervision of professionals such as special education instructors, psychologists or speech-language pathologists
- Work with special needs students using techniques such as sign language, Bliss symbols or Braille
- Monitor students during recess, at noon hour or during the day
- May assist with marking of tests and worksheets
- Assist with classroom inventory
- Assist in school library or office and perform other duties assigned by school principal.

- College courses in child care or related fields may be required for some positions.
- Teacher assistants who aid students with special needs may require specialized training and experience.

Additional information

- Mobility to other occupations related to child and adolescent care is possible with experience.

Classified elsewhere

- *Early Childhood Educators and Assistants* (4214)
- *Elementary School and Kindergarten Teachers* (4142)
- *Post-Secondary Teaching and Research Assistants* (4122)

Employment requirements

- Completion of secondary school is usually required.

6474 Babysitters, Nannies and Parents' Helpers

Babysitters care for children on an ongoing or short-term basis at home or in the children's homes. They are usually self-employed or may be employed by babysitting agencies. Nannies care for children in the employer's residence and provide for their health and physical and social development. Parent's helpers assist parents with child-care and household duties. Nannies and parent's helpers are employed by private households, where they may also reside.

Example titles

babysitter

child caregiver – private home

child-care provider – private home

live-in caregiver

nanny

parent's helper

Main duties

Babysitters perform some or all of the following duties:

- Supervise and care for children in the absence of regular caregiver
- Bathe, dress and feed infants and children
- Prepare formulas and change diapers for infants
- Organize activities such as games and outings to provide amusement and exercise
- May perform housekeeping duties and prepare meals for children according to employer's instructions.

Nannies and live-in caregivers perform some or all of the following duties:

- Supervise and care for children in employer's residence and may reside in employer's home
- Bathe, dress and feed infants and children
- Prepare formulas and change diapers for infants
- Oversee children's activities, such as meals and rest periods, as instructed by employer
- Instruct children in personal hygiene and social development
- Tend to the emotional well-being of children
- Discipline children according to the methods requested by the parents
- Organize and participate in activities such as games, crafts, reading and outings to provide amusement and exercise
- Plan, prepare and serve meals for children and may perform other housekeeping duties
- Take children to and from school and to appointments
- Maintain a healthy environment in the home
- Observe children and prepare reports for home care or babysitting agency

- May be required to keep records of daily activities and health information regarding each child.

Parent's helpers perform some or all of the following duties:

- Assist parent in child supervision and household management
- Bathe, dress and feed infants and children under direction of parent
- Assist with, or may be responsible for, meal preparation, laundry, washing dishes, running errands and other routine housekeeping duties.
- May oversee children's homework assignments required for school
- May care for pets.

Employment requirements

- Completion of secondary school may be required.
- Nannies and live-in caregivers may require completion of a training program in child care or a related field.
- Child-care or household management experience may be required.
- Demonstrated ability to perform work is usually required.
- First aid certification and CPR training may be required.

Additional information

- There is mobility among occupations in this group.

6474 Babysitters, Nannies and Parents' Helpers

Classified elsewhere

- Companions and foster parents (in 6471 *Visiting Homemakers, Housekeepers and Related Occupations*)
- Day-care workers (in 4214 *Early Childhood Educators and Assistants*)

6481 Image, Social and Other Personal Consultants

Image, social and other personal consultants advise clients on their personal appearance, speaking style, manner or other behaviours in order to improve personal or business images. They are employed by beauty salons, fashion boutiques, modelling schools, image consulting companies, or they may be self-employed.

Example titles

colour consultant, fashion

etiquette consultant

fashion and wardrobe consultant

image consultant

make-up consultant

public speaking consultant

wardrobe consultant

wedding consultant

weight loss consultant

Main duties

The following is a summary of the main duties of some occupations in this unit group:

- Image consultants advise clients on hair colour, hairstyles, make-up, clothing and accessories; may advise on posture, general appearance and manner, and provide courses and seminars on business and social etiquette.
- Make-up consultants advise clients on type, colour and application of make-up.
- Colour consultants advise clients on choice of colours for clothing that will complement their appearance.
- Wedding consultants advise clients on the selection of wedding gowns, floral arrangements, banquet facilities, wedding invitations and other items related to weddings.
- Weight loss consultants administer commercial weight loss programs, advise clients on diet and exercise and provide related support services.

Employment requirements

- Completion of secondary school is usually required.
- Specialized training courses are available for colour consultants, make-up and skin care consultants, weight loss consultants and most other occupations in this unit group.
- Experience and expertise in fashion, art, modelling or related fields is usually required.

Classified elsewhere

- Cosmeticians and manicurists (in 6482 *Estheticians, Electrologists and Related Occupations*)
- *Hairstylists and Barbers* (6271)
- Modelling school instructors (in 4216 *Other Instructors*)

6482 Estheticians, Electrologists and Related Occupations

Workers in this unit group provide facial and body treatments designed to enhance an individual's physical appearance. They are employed in beauty salons, electrolysis studios, scalp treatment and hair replacement clinics and other similar establishments and in cosmetic departments of retail establishments such as pharmacies and department stores, or they may be self-employed.

Example titles

beauty treatment operator
cosmetician
electrologist
electrolysis technician
esthetician

hair replacement technician
manicurist
pedicurist
scalp treatment specialist
tattoo artist

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Estheticians give facial and other body treatments using specialized products and techniques.
- Cosmeticians advise customers on the use of make-up and other beauty products and apply make-up to customers; may specialize in applying makeup to models or other individuals for special occasions.
- Electrologists remove unwanted hair permanently from client's face or body using needle only specialized electrical hair removal equipment, laser and other equipment.
- Manicurists and pedicurists clean, shape and polish fingernails and toenails and provide related treatments.
- Scalp treatment specialists apply medicated lotions to treat scalp conditions and hair loss.
- Tattoo artists apply permanent designs to customer's skin, using electric needles and chemical dyes; may also apply temporary designs to customer's skin.
- Hair replacement technicians (non-medical) prepare and apply custom-made hair pieces to customer's scalp, weave customer's hair to hair pieces and provide scalp treatments.

Employment requirements

- Completion of high school, college or beauty school programs for cosmeticians, estheticians, electrologists, manicurists and pedicurists is required
 - or
 - On-the-job training is provided.

- Electrologists usually require certification from an electrologist's educational or training institution.
- Membership in a provincial or national electrolysis association may be required.
- Completion of a registered dermal therapy program may be required to provide electrolysis, laser and vascular treatments.
- Estheticians usually require certification from an esthetician's educational or training institution.
- Apprenticeship for electrologists, estheticians and nail technicians is available in Manitoba. Trade certification for these occupations is compulsory in that province.
- A business license is required for workers in this group who are owners/operators of businesses offering these services.
- Practitioners offering these personal services are required to adhere to infection control procedures.

Additional information

- There is little or no mobility among the different occupations in this unit group without additional specialized training.

Classified elsewhere

- *Hairstylists and Barbers* (6271)
- *Image, Social and Other Personal Consultants* (6481)
- Make-up artists (in 5226 *Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts*)

6483 Pet Groomers and Animal Care Workers

Animal care workers feed, handle, train and groom animals and assist veterinarians, animal health technologists and technicians and animal breeders. Pet groomers clip coats, bathe and otherwise groom pets. Workers in this group are employed by animal hospitals and clinics, animal shelters, breeding and boarding kennels, zoos, laboratories, retail pet shops, dog training schools, pet grooming establishments, or may be self-employed.

Example titles

animal care worker (except farm)	pet groomer
dog groomer	pound attendant
dog trainer	veterinary attendant
kennel attendant	zoo attendant
laboratory animal attendant	

Main duties

Workers in this group perform some or all of the following duties:

- Prepare food and feed animals, fish or birds at scheduled intervals
- Clean and disinfect cages, pens and surrounding areas
- Shampoo, clip and groom animals
- Assist veterinarians and animal health technologists and technicians to inoculate and treat animals
- Assist animal breeders to handle and nurture animals
- Assist scientists and researchers in conducting laboratory tests with animals
- Monitor and document animal behaviour
- Train dogs to obey commands and perform specific duties in response to signals.

Employment requirements

- Completion of secondary school is usually required.
- Depending on the type of work performed, training courses in animal handling, grooming or dog training are usually required. Animal health or veterinary assistant college courses may be required for animal care workers.

Additional information

- Progression to animal health technology occupations is possible with additional training.

Classified elsewhere

- Animal nutritionists (in 2121 *Biologists and Related Scientists*)
- Horseshoers (in 7383 *Other Trades and Related Occupations*)
- Horse trainers (in 8253 *Farm Supervisors and Specialized Livestock Workers*)
- Marine mammal trainers (in 2121 *Biologists and Related Scientists*)
- Sheep shearers (in 8431 *General Farm Workers*)
- *Veterinary and Animal Health Technologists and Technicians* (3213)

6484 Other Personal Service Occupations

This unit group includes occupations, not elsewhere classified, that provide psychic consulting, fortune telling, astrological services and other personal services. They are employed by call centres and personal service establishments, or are self-employed.

Example titles

astrologer	fortune teller
chat line agent	psychic consultant
dating service consultant	psychic reader

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Astrologers chart and interpret stellar and planetary positions on a horoscope to predict future events and trends for a client or the general public.
- Psychic consultants and related advisors provide personal advice to clients based on various schools of thought.
- Other service providers included in this group offer a wide variety of personal services not elsewhere classified.

Employment requirements

- A period of training under the guidance of a practitioner is usually required.

6611 Cashiers

Cashiers operate cash registers, optical price scanners, computers or other equipment to record and accept payment for the purchase of goods, services and admissions. They are employed in stores, restaurants, theatres, recreational and sports establishments, currency exchange booths, government offices, business offices and other service, retail and wholesale establishments.

Example titles

box office cashier
cafeteria cashier
grocery store cashier
office cashier

racetrack cashier
self-serve gas bar cashier
theatre cashier

Main duties

Cashiers perform some or all of the following duties:

- Greet customers
- Establish or identify price of goods, services or admission and tabulate total payment required using electronic or other cash register, optical price scanner or other equipment
- Weigh produce and bulk foods
- Receive and process payments by cash, cheque, credit card or automatic debit
- Wrap or place merchandise in bags
- Provide information to customers
- Assist sports spectators and theatre patrons with seat selection
- Calculate foreign currency exchange
- Calculate total payments received at end of work shift and reconcile with total sales
- May accept reservations and take-out orders
- May also stock shelves and clean check-out counter area.

Employment requirements

- Some secondary school education is usually required.
- Eligibility for bonding may be required.
- A casino gaming licence may be required for cashiers working in gambling casinos.

Additional information

- Cashiers may progress to supervisory positions, such as head cashier, with additional training or experience.

Classified elsewhere

- *Customer Service Representatives – Financial Services* (1433)
- Head cashiers (in 6211 *Retail Trade Supervisors*)
- *Retail Salespersons and Sales Clerks* (6421)
- *Service Station Attendants* (6621)

6621 Service Station Attendants

Service station attendants employed in automotive service stations sell fuel and other automotive products and perform such services as fuelling, cleaning, lubricating and performing minor repairs to motor vehicles. Those employed in marinas sell fuel, rent boats and related equipment, and maintain marina facilities.

Example titles

gas station attendant (except self-serve)
marina attendant

service station attendant

Main duties

Automotive service station attendants perform some or all of the following duties:

- Refuel vehicles
- Perform minor service and maintenance such as washing the windshield, checking fluid levels and air pressure, and replacing parts such as tires, light bulbs and windshield-wiper blades
- Receive payment from customers
- Perform minor property maintenance duties such as sweeping service station lot, trimming shrubs, scrubbing service bays and painting curbs
- May pick up and deliver customers' cars for service station automotive repair department.

Marina service station attendants perform some or all of the following duties:

- Refuel boats
- Pump boat's marine septic system
- Rent boats, life jackets and other equipment and record rental data
- Receive payment from customers
- Maintain dock area and marina facilities and assist in seasonal moving of ramps and docks.

Classified elsewhere

- Auto technicians (in 7321 *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers*)
- Self-serve gas bar cashiers (in 6611 *Cashiers*)
- Service station managers (in 0621 *Retail Trade Managers*)
- Service station supervisors (in 6211 *Retail Trade Supervisors*)

Employment requirements

- Some secondary school education is usually required.
- Propane and natural gas pump attendants may require an operator's licence.

6622 Grocery Clerks and Store Shelf Stockers

Grocery clerks and store shelf stockers pack customers' purchases, price items, stock shelves with merchandise and fill mail and telephone orders. They are employed in retail establishments, such as grocery, hardware and department stores, and in warehouses.

Example titles

bag clerk
grocery clerk
grocery packer
order filler – retail

price clerk – retail
produce clerk
shelf stocker – retail
supermarket clerk

Main duties

Grocery clerks and store shelf stockers perform some or all of the following duties:

- Bag, box or parcel purchases for customers or for shipment or delivery to customers
- Carry customers' purchases to parking lot and pack in vehicles
- Unpack products received by store and count, weigh or sort items
- Use barcode scanning equipment to record incoming stock, verify pricing and maintain computerized stock inventory
- Price items using stamp or stickers according to price list
- Attach protective devices to products to protect against shoplifting
- Stock shelves and display areas and keep stock clean and in order
- Fill mail orders from warehouse stock
- Obtain articles for customers from shelf or stockroom
- Direct customers to location of articles sought
- May sweep aisles, dust display racks and perform other general cleaning duties
- May operate cash register and computer for electronic commerce transactions
- May order stock.

Employment requirements

- Some secondary school education is usually required.

Classified elsewhere

- *Cashiers (6611)*
- Comparison shopper (in 6623 *Other Elemental Sales Occupations*)
- Meat counter clerk (in 6421 *Retail Salespersons and Sales Clerks*)
- Stock handler (in 7452 *Material Handlers*)
- Supervisor, stock clerks (in 6211 *Retail Trade Supervisors*)

6623 Other Elemental Sales Occupations

This unit group includes workers who sell goods or services during home demonstrations or by telephone soliciting, retail exhibitions or street vending. They are employed by a wide range of retail and wholesale establishments, manufacturers, telemarketing companies and call centres, or they may be self-employed.

Example titles

canvasser – retail

demonstrator – retail

direct distributor – retail

door-to-door salesperson

home demonstrator – retail

street vendor

telemarketer

telephone solicitor

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Direct distributors, contact potential customers by phone or through personal contacts, demonstrate and sell products directly to individual customers or at sales parties and deliver purchased goods to customers.
- Door-to-door salespersons solicit sales and sell merchandise to residents of private homes.
- Street vendors set up and display merchandise on sidewalks or at public events to sell to the public.
- Telephone solicitors and telemarketers contact businesses or private individuals, by telephone, to solicit sales for goods or services or conduct market surveys
- Demonstrators arrange sales demonstration appointments, and show, describe and sell goods or services at wholesale, retail and industrial establishments, and at exhibitions, trade shows and private homes.

Employment requirements

- Some secondary school education is usually required. High school graduation may be required by some employers.
- Self-employed street vendors and door-to-door salespersons may require a municipal merchant's permit.

Additional information

- Progression to related supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Cashiers* (6611)
- Kiosk sales clerks (in 6421 *Retail Salespersons and Sales Clerks*)
- *Retail Trade Managers* (0621)
- *Retail Trade Supervisors* (6211)

6641 Food Counter Attendants, Kitchen Helpers and Related Occupations

Workers in this unit group include counter attendants, food preparers, kitchen helpers, food service helpers and dishwashers. Counter attendants and food preparers prepare, heat and finish cooking simple food items and serve customers at food counters. Kitchen helpers, food service helpers and dishwashers clear tables, clean kitchen areas, wash dishes, and perform various other activities to assist workers who prepare or serve food and beverages. They are employed by restaurants, cafes, hotels, fast food outlets, cafeterias, hospitals and other establishments.

Example titles

bartender helper	food preparer
bus boy/girl	food service helper
cook's helper	ice cream counter attendant
counter attendant, cafeteria	kitchen helper
dishwasher	salad bar attendant
fast-food preparer	sandwich maker
food counter attendant	

Main duties

Food service counter attendants and food preparers perform some or all of the following duties:

- Take customers' orders
- Clean, peel, slice and trim foodstuffs using manual and electric appliances
- Prepare food such as sandwiches, hamburgers, salads, milkshakes and ice cream dishes
- Portion and wrap food or place it directly on plates for service to patrons, and package take-out food
- Serve customers at counters or buffet tables
- Stock refrigerators and salad bars and keep records of the quantities of food used
- May receive payment for food items purchased.

Kitchen helpers perform some or all of the following duties:

- Wash and peel vegetables and fruit
- Wash work tables, cupboards and appliances
- Remove trash and clear kitchen garbage containers
- Unpack and store supplies in refrigerators, cupboards and other storage areas
- Sweep and mop floors, and perform other duties to assist cook and kitchen staff.

Food service helpers perform some or all of the following duties:

- Clear and clean tables and trays in eating establishments
- Bring clean dishes, flatware and other items to serving areas and set tables

- Replenish condiments and other supplies at tables and in serving areas
- Remove dishes before and after courses
- Perform other duties such as scraping and stacking dishes, carrying linen to and from laundry area and running errands.

Dishwashers perform some or all of the following duties:

- Wash dishes, glassware, flatware, pots and pans using dishwasher or by hand
- Place dishes in storage area
- Scour pots and pans, and may clean and polish silverware.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.

Additional information

- There is considerable mobility among jobs in this unit group.
- Movement into other occupations within food preparation and service, such as cook or waiter, is possible with further training and experience.

Classified elsewhere

- *Chefs* (6241)
- *Cooks* (6242)
- *Food and Beverage Servers* (6453)
- Street food vendors (in 6623 *Other Elemental Sales Occupations*)

6651 Security Guards and Related Occupations

This unit group includes security guards and other related workers who guard property against theft and vandalism, control access to establishments, maintain order and enforce regulations at public events and within establishments. They are employed by private security agencies, retail stores, transportation facilities, residential complexes, educational, financial and health institutions, industrial establishments, cultural establishments, and organizations throughout the private and public sectors.

Example titles

airport security guard	gate attendant – security
armoured car guard	night watchman/woman
bodyguard (except police)	preboarding security guard
bouncer	security guard
commissionnaire	security officer
crossing guard	

Main duties

Workers in this unit group perform some or all of the following duties:

- Control access to establishments, issue passes and direct visitors to appropriate areas
- Attend to persons with special needs
- Patrol assigned areas, on foot or in vehicles, to guard against theft, shoplifting, vandalism and fire
- Ensure safety of children crossing roads
- Check age identification of patrons
- Enforce regulations of an establishment to maintain order and resolve conflicts
- Operate security control-room equipment to monitor establishment activities
- Perform security checks of passengers and luggage at airports
- Drive and guard armoured trucks and deliver cash and valuables to banks, automated teller machines and retail establishments
- Ensure that establishment safety and emergency procedures are followed, and respond to fire alarms, bomb threats and other emergencies.
- Follow radio and emergency telephone procedures.

- Security guards carrying firearms require a licence.

Classified elsewhere

- *Correctional Service Officers* (6462)
- Managers of security agencies (in 0123 *Other Business Services Managers*)
- Private investigators (in 6465 *Other Protective Service Occupations*)
- Supervisors of security guards and related occupations (in 6216 *Other Service Supervisors*)

Employment requirements

- Some secondary school education is usually required.
- Armoured car drivers require a driver's licence.
- Training is provided for airport security guards and establishment-specific training may be provided for other security occupations in this unit group.

6661 Light Duty Cleaners

Light duty cleaners clean the lobbies, hallways, offices and rooms of hotels, motels, resorts, hospitals, schools, office and other buildings, and private residences. They are employed by hotels, motels, resorts, recreational facilities, hospitals and other institutions, building management companies, cleaning service companies and private individuals.

Example titles

cleaner	light duty cleaner
hospital cleaner	office cleaner
hotel cleaner	room attendant
house cleaner	sweeper

Main duties

Light duty cleaners perform some or all of the following duties:

- Sweep, mop, wash, wax and polish floors
- Dust furniture and vacuum carpeting and area rugs, draperies and upholstered furniture
- Make beds, change sheets and distribute clean towels and toiletries
- Attend to guests' requests for extra supplies
- Stock linen closet and supplies area
- Clean, disinfect and polish kitchen and bathroom fixtures and appliances
- Clean and disinfect public areas such as changing rooms, showers and elevators
- Disinfect operating rooms and other hospital areas
- Pick up debris and empty trash containers
- Wash windows, walls and ceilings.
- Report and store lost and found items
- May provide basic information on facilities
- May handle complaints.

Employment requirements

- There are no specific education requirements for occupations in this unit group.
- Certification for housekeeping room attendants or similar certification may be required by some employers.

Additional information

- Progression to supervisory cleaning positions is possible with additional training or experience.

Classified elsewhere

- *Cleaning Supervisors* (6215)
- *Janitors, Caretakers and Building Superintendents* (6663)
- *Specialized Cleaners* (6662)

6662 Specialized Cleaners

Specialized cleaners clean and refurbish building exteriors, carpets, chimneys, industrial equipment, ventilation systems, windows and other surfaces, using specialized equipment and techniques. They are employed by specialized cleaning service companies or they may be self-employed.

Example titles

auto detailer
building exterior cleaner
carpet cleaner
chimney cleaner
freight car cleaner
furnace cleaner
laboratory equipment cleaner

sandblaster
septic tank cleaner
upholstery cleaner
vehicle cleaner
ventilation system cleaner
window cleaner

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Carpet and upholstery cleaners operate cleaning machines to clean carpets, rugs and upholstered furniture on customers' premises or in carpet and upholstery cleaning establishments.
- Chimney cleaners clean soot and creosote from chimneys and fireplaces using hand tools and industrial vacuum cleaners.
- Furnace and ventilation system cleaners clean ducts, vents and filters of furnaces in residences and commercial buildings using hand tools and industrial vacuum cleaners.
- Sandblasters clean building exteriors, tanks, chimneys and industrial equipment using sandblasting, pressurized steam or hydroblasting equipment.
- Vehicle cleaners clean the interior and exterior of automobiles, buses, streetcars, railway cars and subway cars.
- Window cleaners wash and clean interior and exterior windows and other glass surfaces in low-rise and highrise buildings.

Employment requirements

- There are no specific education requirements for occupations in this unit group.
- On-the-job training is usually provided.
- Previous experience in a related position may be required for some occupations in this unit group.

Additional information

- Progression to supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Cleaning Supervisors* (6215)
- *Janitors, Caretakers and Building Superintendents* (6663)
- *Light Duty Cleaners* (6661)

6663 Janitors, Caretakers and Building Superintendents

Janitors, caretakers and building superintendents clean and maintain the interior and exterior of commercial, institutional and residential buildings and their surrounding grounds. Building superintendents employed in large establishments are responsible for the operation of the establishment and may also supervise other workers. They are employed by office and apartment building management companies, condominium corporations, educational institutions, health care facilities, recreational and shopping facilities, religious establishments, and industrial and other establishments.

Example titles

building caretaker	heavy-duty cleaner
building superintendent	industrial cleaner
custodian	plant cleaner
handyman/woman	school janitor

Main duties

Janitors, caretakers and building superintendents perform some or all of the following duties:

- Operate industrial vacuum cleaners to remove scraps, dirt, heavy debris and other refuse
- Wash windows, interior walls and ceilings
- Empty trash cans and other waste containers
- Sweep, mop, scrub and wax hallways, floors and stairs
- Clean snow and ice from walkways and parking areas
- Cut grass and tend grounds
- Clean and disinfect washrooms and fixtures
- Make adjustments and minor repairs to heating, cooling, ventilating, plumbing and electrical systems, and contact tradespersons for major repairs
- Perform other routine maintenance jobs such as painting and drywall repair
- May water and tend to plants
- May move heavy furniture, equipment and supplies
- Ensure that security and safety measures are in place in the establishment
- May advertise vacancies, show apartments and offices to prospective tenants and collect rent
- May supervise other workers.

Employment requirements

- Completion of secondary school may be required.
- Some occupations in this unit group require previous cleaning and maintenance experience.

- A journeyman/woman certificate in one or more of the trades or a building operator certificate may be required for building superintendents.

Additional information

- Progression to supervisory positions is possible with additional training or experience.

Classified elsewhere

- *Cleaning Supervisors* (6215)
- *Light Duty Cleaners* (6661)
- *Specialized Cleaners* (6662)

6671 Operators and Attendants in Amusement, Recreation and Sport

This unit group includes amusement occupations such as operators of amusement rides, games and other attractions, and attendants in amusement, recreation and sports facilities who assist patrons, collect tickets and fees and supervise the use of recreational and sports equipment. They are employed by amusement parks, fairs, exhibitions, carnivals, arenas, billiard parlours, bowling alleys, golf courses, ski centres, tennis clubs, campgrounds and other recreational and sports facilities.

Example titles

amusement attraction operator
amusement park attendant
amusement ride operator
athletic equipment custodian
billiard parlour attendant
bingo hall attendant
bowling alley attendant
campground attendant

game concession operator
ice maker, rink
recreational facility attendant
recreation attendant
ski lift attendant
sports attendant
tennis court attendant

Main duties

Amusement attraction operators perform some or all of the following duties:

- Drive trucks, vans and other vehicles to transport amusement rides, games and other attractions to amusement attraction sites
- Set up rides, fun houses, game concessions and other amusement attractions
- Perform routine maintenance and safety inspections of attraction equipment
- Operate rides and other attractions, oversee game activities and ensure safety of participants
- Supervise amusement attraction attendants and may sell tickets.

Attendants in amusement, recreation and sport perform some or all of the following duties:

- Collect tickets and fees, and rent or sell sports and accessory equipment
- Schedule the use of recreational facilities such as golf courses, tennis courts, bowling alleys, fitness clubs, campgrounds and other similar facilities
- Operate recreational facility equipment such as ski lifts, ice rink equipment and snow making machines
- Assist patrons on and off ski lifts and amusement park rides, secure and release safety belts and bars and monitor equipment to detect wear and damage.
- Clean and maintain recreational facilities and grounds.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is usually provided.

Classified elsewhere

- *Casino Occupations* (6443)
- *Other Elemental Service Occupations* (6683)
- *Other Personal Service Occupations* (6484)
- *Program Leaders and Instructors in Recreation, Sport and Fitness* (5254)
- Supervisors of operators and attendants in amusement, recreation and sport (in 6216 *Other Service Supervisors*)

6672 Other Attendants in Accommodation and Travel

This unit group includes workers who carry hotel guests' luggage and escort guests to their rooms, carry travellers' luggage at airports, in railway stations and aboard ships, and clean and maintain public areas and passengers' rooms aboard ships and trains. They are employed by airports, hotels, railway companies and water transport companies.

Example titles

baggage porter	passenger attendant, cruise line
bellhop	passenger attendant, ship
doorkeeper, hotel	porter
guest services attendant, hotel	redcap
luggage attendant	train service attendant

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Guest service attendants carry luggage for hotel guests, escort incoming guests to their rooms, check rooms to ensure they are in order, offer information regarding features of rooms, services of hotel and points of interest, assist guests with special needs, attend to group arrivals and departures, receive and deliver items and messages for guests, handle guest complaints and requests, and maintain luggage storage areas.
- Baggage porters convey travellers' luggage at railway stations and airports by hand or hand truck and arrange for ground transportation.
- Ship attendants serve food and beverages, clean cabins, make beds, wash dishes and carry luggage for passengers aboard ships.
- Train service attendants set and clear tables in dining cars, clean sleeping cars, maintain washroom supplies and assist passengers as required.

Employment requirements

- Some secondary school education may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Air Transport Ramp Attendants* (7437)
- *Pursers and Flight Attendants* (6432)
- Supervisors of attendants in this unit group (in 6216 *Other Service Supervisors*)
- *Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline)* (6434)
- *Tour and Travel Guides* (6441)

6681 Dry Cleaning and Laundry Occupations

Dry cleaning and laundry machine operators operate machines to dry-clean or launder garments and other articles. Dry cleaning and laundry inspectors and assemblers check finished garments and other articles to ensure that they meet required standards for dry-cleaning, laundering and pressing, and assemble and bag finished garments and other articles. They are employed in dry cleaning, laundry and fur cleaning establishments, and in the laundries of hotels, hospitals and other institutions.

Example titles

assembler, laundry and dry cleaning
bagger, laundry and dry cleaning
cleaning machine operator
drapery cleaner
dry cleaner
dyer, laundry and dry cleaning
fur cleaner
inspector – laundry and dry cleaning

laundry machine operator
laundry worker
leather cleaner
machine operator, laundry and dry cleaning
spotter
sprayer, leather or suede
suede cleaner

Main duties

Dry cleaning and laundry machine operators perform some or all of the following duties:

- Operate dry cleaning machines to dry-clean dresses, suits, coats, sweaters and other garments, draperies, cushion covers and other articles
- Operate washing machines and dryers to clean and dry garments, sheets, blankets, towels and other articles
- Operate machines to clean and blow-dry fur garments
- Operate machines to dry-clean, dye, spray, re-oil, and re-buff suede and leather garments.

Dry cleaning and laundry inspectors and assemblers perform some or all of the following duties:

- Check finished garments and other articles to ensure that they are properly dry-cleaned or laundered
- Record damaged or improperly dry-cleaned or laundered garments and other articles
- Use hand-held steam iron to touch up finished garments and other articles
- Assemble and bag finished garments and other articles
- Match invoices with tags on garments or other articles.

- Dry cleaning and laundry machine operators may require experience as inspectors or assemblers.
- Suede, leather and fur cleaners may require experience as dry cleaning or laundry machine operators.

Additional information

- Progression to supervisory dry cleaning and laundry occupations is possible with additional training and experience.

Classified elsewhere

- Alterers (in 7342 Tailors, Dressmakers, Furriers and Milliners)
- *Dry Cleaning and Laundry Supervisors* (6214)
- Dry cleaning service managers (in 0651 Other Services Managers)
- *Ironing, Pressing and Finishing Occupations* (6682)

Employment requirements

- Some secondary school education is required.
- Four to eight weeks of on-the-job training are usually provided.

6682 Ironing, Pressing and Finishing Occupations

This unit group includes workers who iron, press or otherwise finish garments and household articles. They are employed by dry cleaning, laundry and fur cleaning establishments, and by laundries in hotels, hospitals and similar establishments.

Example titles

finisher	presser
laundry finisher	silk finisher
pleat finisher	steam finisher

Main duties

Workers in this unit group perform some or all of the following duties:

- Operate finishing equipment such as steam presses, and use hand irons to finish pants, jackets, shirts, skirts and other dry cleaned and laundered articles
- Hand iron laundered fine lace or dry-cleaned silk garment
- Operate fur ironing and glazing equipment to finish fur garments and other fur articles
- Fold and bag dry cleaned and laundered articles
- May operate laundering equipment.

Workers in this group may specialize in finishing suede, leather, fur and delicate articles.

Employment requirements

- Some secondary school education is required.
- On-the-job training is provided.

Additional information

- Progression to supervisory dry cleaning and laundry positions is possible with additional training or experience.

Classified elsewhere

- *Dry Cleaning and Laundry Occupations* (6681)
- *Dry Cleaning and Laundry Supervisors* (6214)

6683 Other Elemental Service Occupations

This unit group includes elemental occupations, not elsewhere classified, primarily concerned with the provision of services. Those in occupations in this unit group are employed by a wide range of retail service and other establishments, and may be self-employed.

Example titles

beauty salon attendant	laundromat attendant
car jockey	parking lot attendant
cloakroom attendant	shoe shiner
door attendant (except hotel)	tanning salon attendant
funeral home attendant	ticket taker
fur storage attendant	toll booth attendant
hotel valet	

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Beauty salon attendants shampoo, condition and dry customers' hair, assist hair stylists as directed and keep work areas clean.
- Door attendants assist persons entering or leaving residential buildings, theatres and similar establishments and may hail taxis and assist with parcels.
- Funeral home attendants drive hearses, arrange lights and floral displays, escort mourners, act as pallbearers and clean funeral parlours and chapels.
- Laundromat attendants replenish vending machines, provide change, explain operation of machines to customers, clean the laundromat and arrange for the repair of broken machines and may wash, dry and fold laundry for customers; may operate dry cleaning machines for customers.
- Parking lot attendants and car jockeys collect parking fees, issue ticket stubs, direct customers to parking spaces and park cars.
- Ticket takers and ushers collect admission tickets or passes from patrons at entertainment events and direct patrons to their seats.
- Other related elemental workers in this group perform services specific to the establishments in which their occupations are found.

Employment requirements

- There are no specific education requirements for occupations in this unit group.
- A valid driver's licence is required for some occupations in this unit group, such as funeral attendant and car jockey.

Classified elsewhere

- *Operators and Attendants in Amusement, Recreation and Sport* (6671)
- *Other Attendants in Accommodation and Travel* (6672)



TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS

Major Group 72/73

TRADES AND SKILLED TRANSPORT AND EQUIPMENT OPERATORS

721 Contractors and Supervisors, Trades and Related Workers

- 7211 Supervisors, Machinists and Related Occupations
- 7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
- 7213 Contractors and Supervisors, Pipefitting Trades
- 7214 Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades
- 7215 Contractors and Supervisors, Carpentry Trades
- 7216 Contractors and Supervisors, Mechanic Trades
- 7217 Contractors and Supervisors, Heavy Construction Equipment Crews
- 7218 Supervisors, Printing and Related Occupations
- 7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers

722 Supervisors, Railway and Motor Transportation Occupations

- 7221 Supervisors, Railway Transport Operations
- 7222 Supervisors, Motor Transport and Other Ground Transit Operators

723 Machinists and Related Occupations

- 7231 Machinists and Machining and Tooling Inspectors
- 7232 Tool and Die Makers

724 Electrical Trades and Telecommunication Occupations

- 7241 Electricians (Except Industrial and Power System)
- 7242 Industrial Electricians
- 7243 Power System Electricians
- 7244 Electrical Power Line and Cable Workers
- 7245 Telecommunications Line and Cable Workers
- 7246 Telecommunications Installation and Repair Workers
- 7247 Cable Television Service and Maintenance Technicians

725 Plumbers, Pipefitters and Gas Fitters

- 7251 Plumbers
- 7252 Steamfitters, Pipefitters and Sprinkler System Installers
- 7253 Gas Fitters

726 Metal Forming, Shaping and Erecting Trades

- 7261 Sheet Metal Workers
- 7262 Boilermakers
- 7263 Structural Metal and Platework Fabricators and Fitters
- 7264 Ironworkers
- 7265 Welders and Related Machine Operators
- 7266 Blacksmiths and Die Setters

727 Carpenters and Cabinetmakers

- 7271 Carpenters
- 7272 Cabinetmakers

728 Masonry and Plastering Trades

- 7281 Bricklayers
- 7282 Concrete Finishers
- 7283 Tilesetters
- 7284 Plasterers, Drywall Installers and Finishers and Lathers

729 Other Construction Trades

- 7291 Roofers and Shinglers
- 7292 Glaziers
- 7293 Insulators
- 7294 Painters and Decorators
- 7295 Floor Covering Installers

731 Machinery and Transportation Equipment Mechanics (Except Motor Vehicle)

- 7311 Construction Millwrights and Industrial Mechanics (Except Textile)
- 7312 Heavy-Duty Equipment Mechanics
- 7313 Refrigeration and Air Conditioning Mechanics
- 7314 Railway Carmen/women
- 7315 Aircraft Mechanics and Aircraft Inspectors
- 7316 Machine Fitters
- 7317 Textile Machinery Mechanics and Repairers
- 7318 Elevator Constructors and Mechanics

732 Automotive Service Technicians

- 7321 Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers
- 7322 Motor Vehicle Body Repairers

733 Other Mechanics

- 7331 Oil and Solid Fuel Heating Mechanics
- 7332 Electric Appliance Servicers and Repairers
- 7333 Electrical Mechanics
- 7334 Motorcycle and Other Related Mechanics
- 7335 Other Small Engine and Equipment Mechanics

Classification Structure

734 Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations

- 7341 Upholsterers
- 7342 Tailors, Dressmakers, Furriers and Milliners
- 7343 Shoe Repairers and Shoemakers
- 7344 Jewellers, Watch Repairers and Related Occupations

735 Stationary Engineers and Power Station and System Operators

- 7351 Stationary Engineers and Auxiliary Equipment Operators
- 7352 Power Systems and Power Station Operators

736 Train Crew Operating Occupations

- 7361 Railway and Yard Locomotive Engineers
- 7362 Railway Conductors and Brakemen/women

737 Crane Operators, Drillers and Blasters

- 7371 Crane Operators
- 7372 Drillers and Blasters - Surface Mining, Quarrying and Construction
- 7373 Water Well Drillers

738 Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.

- 7381 Printing Press Operators
- 7382 Commercial Divers
- 7383 Other Trades and Related Occupations

Major Group 74

INTERMEDIATE OCCUPATIONS IN TRANSPORT, EQUIPMENT OPERATION, INSTALLATION AND MAINTENANCE

741 Motor Vehicle and Transit Drivers

- 7411 Truck Drivers
- 7412 Bus Drivers, Subway Operators and Other Transit Operators
- 7413 Taxi and Limousine Drivers and Chauffeurs
- 7414 Delivery and Courier Service Drivers

742 Heavy Equipment Operators

- 7421 Heavy Equipment Operators (Except Crane)
- 7422 Public Works Maintenance Equipment Operators

743 Other Transport Equipment Operators and Related Workers

- 7431 Railway Yard Workers
- 7432 Railway Track Maintenance Workers
- 7433 Deck Crew, Water Transport
- 7434 Engine Room Crew, Water Transport
- 7435 Lock and Cable Ferry Operators and Related Occupations
- 7436 Boat Operators
- 7437 Air Transport Ramp Attendants

744 Other Installers, Repairers and Servicers

- 7441 Residential and Commercial Installers and Servicers
- 7442 Waterworks and Gas Maintenance Workers
- 7443 Automotive Mechanical Installers and Servicers
- 7444 Pest Controllers and Fumigators
- 7445 Other Repairers and Servicers

745 Longshore Workers and Material Handlers

- 7451 Longshore Workers
- 7452 Material Handlers

Major Group 76

TRADES HELPERS, CONSTRUCTION LABOURERS AND RELATED OCCUPATIONS

761 Trades Helpers and Labourers

- 7611 Construction Trades Helpers and Labourers
- 7612 Other Trades Helpers and Labourers

762 Public Works and Other Labourers, n.e.c.

- 7621 Public Works and Maintenance Labourers
- 7622 Railway and Motor Transport Labourers

7211 Supervisors, Machinists and Related Occupations

Supervisors in this unit group supervise and co-ordinate the activities of workers classified in the following unit groups: *Machinists and Machining and Tooling Inspectors* (7231), *Tool and Die Makers* (7232) and *Machining Tool Operators* (9511). They are employed by metal products manufacturing companies and machine shops.

Example titles

foreman/woman, automotive machine shop

foreman/woman, machinists

foreman/woman, maintenance machine shop

foreman/woman, tool and die makers

supervisor, machine shop

supervisor, machinists

supervisor, metal mould and metal patternmakers

supervisor, tool and die inspectors

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who machine metal into parts, products, tools and dies or moulds with precise dimensions
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hiring and promotions
- Ensure standards for safe working conditions are observed
- Prepare production and other reports
- May set up machines and equipment and write programs for computer numerically controlled (CNC) machine tools
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified machinist or tool and die maker are required.
- Trade certification in machining or tool and die making is required.

Classified elsewhere

- CAD-CAM and CMM programmers (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades* (7214)

7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations

This unit group includes telecommunications and electrical trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: *Electricians (7241)*, *Industrial Electricians (7242)*, *Power System Electricians (7243)*, *Electrical Power Line and Cable Workers (7244)*, *Telecommunications Line and Cable Workers (7245)*, *Telecommunications Installation and Repair Workers (7246)* and *Cable Television Service and Maintenance Technicians (7247)*. They are employed in a wide range of establishments; places of employment are indicated in the above unit group descriptions.

Example titles

electrical contractor
foreman/woman, cablevision technicians
foreman/woman, construction electricians
foreman/woman, industrial electricians
foreman/woman, power line and cable workers
foreman/woman, power system electricians

foreman/woman, telecommunications installation and repair workers
supervisor, cable maintenance and repair
supervisor, plant electricians
supervisor, residential electricians

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who install, repair and maintain electrical wiring, fixtures and control devices, power systems, telecommunication systems and cablevision systems
- Establish methods to meet work schedules and co-ordinate work activities with other subcontractors or departments
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hirings and promotions
- Ensure standards for safe working conditions are observed
- Prepare work progress reports
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Additional information

- There is some mobility between jobs within a specific trade; however, there is little or no intertrade mobility.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified tradesperson in a relevant trade are required.
- Journeyman/woman trade certification in a relevant trade is required.

7213 Contractors and Supervisors, Pipefitting Trades

This unit group includes plumbing and other pipefitting trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: *Plumbers* (7251), *Steamfitters, Pipefitters and Sprinkler System Installers* (7252) and *Gas Fitters* (7253). They are employed by construction companies, mechanical, plumbing and pipefitting trade contractors and maintenance departments of industrial, commercial and manufacturing establishments.

Example titles

contractor, pipefitting	foreman/woman, sprinkler system installers
contractor, plumbing	foreman/woman, steamfitters
foreman/woman, gas fitters	supervisor, gas fitters
foreman/woman, pipefitters	supervisor, plumbers
foreman/woman, plumbers	supervisor, steamfitters

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who install, repair and maintain piping systems used for the transmission of steam, heat, water, oil and other liquids and gases in residential, commercial, industrial and other installations
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hirings and promotions
- Ensure standards for safe working conditions are observed
- Prepare schedules and other reports
- May manage the operations of own company
- May supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified tradesperson in a relevant trade are required.
- Journeyman/woman trade certification in a relevant trade is required.

Additional information

- There is little or no intertrade mobility among the supervisors in this unit group.

7214 Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades

This unit group includes sheet metal, ironwork, welding and boilermaking trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: *Sheet Metal Workers* (7261), *Boilermakers* (7262), *Structural Metal and Platework Fabricators and Fitters* (7263), *Ironworkers* (7264), *Welders and Related Machine Operators* (7265) and *Blacksmiths and Die Setters* (7266). They are employed by structural, platework and related metal products fabrication, manufacturing and erecting companies.

Example titles

contractor, ironwork	supervisor, boilermakers
foreman/woman, blacksmiths	supervisor, sheet metal workers
foreman/woman, boilermakers	supervisor, structural metal fitters
foreman/woman, ironworkers	supervisor, welders

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who shape, form and join metal parts or products to specified dimensions and erect light and heavy metal products and structures
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hirings and promotions
- Ensure standards for safe working conditions are observed
- Prepare production and other reports
- Set up machines and equipment
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of apprentices, machine operators, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified tradesperson in a relevant trade are required.
- Journeyman/woman trade certification in a relevant trade is required.

Additional information

- There is little or no intertrade mobility among the supervisors in this unit group.

Classified elsewhere

- *Supervisors, Other Mechanical and Metal Products Manufacturing* (9226)

7215 Contractors and Supervisors, Carpentry Trades

This unit group includes carpentry and cabinetmaking trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: *Carpenters* (7271) and *Cabinetmakers* (7272). They are employed by construction companies, carpentry contractors, maintenance departments of industrial establishments, and custom furniture and fixture manufacturing or repair companies.

Example titles

cabinetmaking contractor	foreman/woman, framers
carpentry contractor	foreman/woman, maintenance carpenters
foreman/woman, finish carpenters	supervisor, carpenters
foreman/woman, form builders	

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of carpenters who construct, renovate and maintain structures of wood and other building materials and build and install interior finishing in residential, commercial and industrial buildings; and of cabinetmakers who construct and repair custom wooden cabinets, furniture, fixtures and related products
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hirings and promotions
- Ensure standards for safe working conditions are observed
- Prepare schedules and other reports
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified carpenter or cabinetmaker are required.
- Journeyman/woman trade certification as a carpenter or cabinetmaker is usually required.

Additional information

- There is some mobility among jobs within a specific trade; however, there is little or no intertrade mobility.

Classified elsewhere

- *Construction Managers* (0711)
- *Residential Home Builders and Renovators* (0712)
- *Supervisors, Furniture and Fixtures Manufacturing* (9224)

7216 Contractors and Supervisors, Mechanic Trades

This unit group includes heating, refrigeration, air conditioning, millwrighting and elevator installation trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in unit groups within the following minor groups:

Machinery and Transportation Equipment Mechanics (Except Motor Vehicle) (731), Automotive Service Technicians (732) and Other Mechanics (733). They are employed in a wide range of establishments; places of employment are indicated in the unit group descriptions.

Example titles

contractor, heating systems
foreman/woman, air conditioning and refrigeration mechanics
foreman/woman, aircraft mechanics and inspectors
foreman/woman, electrical mechanics
foreman/woman, heating systems mechanics
foreman/woman, heavy-duty equipment mechanics
foreman/woman, printing machine repairers
foreman/woman, railway car repairers

foreman/woman, railway equipment maintenance inspectors
foreman/woman, textile machine mechanics
supervisor, aircraft maintenance engineers (AME)
supervisor, appliance repair shop
supervisor, industrial mechanics
supervisor, motor vehicle repair shop
supervisor, small-engine repair shop

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who repair and maintain aircraft, railway locomotives and cars, industrial machinery and equipment, construction and other heavy equipment, textile equipment, printing machines, heating equipment and furnaces, transformers and other electrical equipment, motor vehicles, air-conditioning and refrigeration equipment, electric appliances and other equipment, such as motorcycles, outboard motors and snowmobiles
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend work measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hiring and promotions
- Ensure that standards for safe working conditions are observed
- Prepare production and other reports
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a qualified tradesperson in a relevant trade are usually required.
- Journeyman/woman trade certification in a relevant trade is required.

Additional information

- There is little or no intertrade mobility among the supervisors in this unit group.

7217 Contractors and Supervisors, Heavy Construction Equipment Crews

This unit group includes excavating, grading, paving, drilling and blasting contractors who own and operate their own business. This unit group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: *Crane Operators* (7371), *Drillers and Blasters – Surface Mining, Quarrying and Construction* (7372), *Heavy Equipment Operators (Except Crane)* (7421), *Longshore Workers* (7451), *Material Handlers* (7452), *Public Works Maintenance Equipment Operators* (7422), *Railway Track Maintenance Workers* (7432) and *Water Well Drillers* (7373). They are employed in a wide range of establishments; places of employment are indicated in the above unit group descriptions.

Example titles

excavating contractor	pipeline construction supervisor
foreman/woman, demolition	road maintenance foreman/woman
foreman/woman, drilling and blasting – construction	section foreman/woman, railway supervisor, heavy equipment operators
foreman/woman, logging road construction	supervisor, oil field construction supervisor, water well drilling
foreman/woman, railway gang	track foreman/woman – railway
foreman/woman, railway track maintenance	
paving contractor	

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who operate cranes and construction, paving, drilling, railway maintenance and other similar heavy equipment
- Establish methods to meet work schedules and co-ordinate work activities with other project supervisors or managers
- Requisition materials and supplies
- Resolve work problems and recommend measures to improve productivity
- Train or arrange for training of workers
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience in the occupation supervised is required.
- Journeyman/woman trade certification in a relevant trade may be required.

Additional information

- There is some mobility between occupations classified in this unit group.

Classified elsewhere

- Supervisors of heavy equipment mechanics (in *7216 Contractors and Supervisors, Mechanic Trades*)
- Supervisors of logging machinery operators (in *8211 Supervisors, Logging and Forestry*)

7218 Supervisors, Printing and Related Occupations

Supervisors in this unit group supervise and co-ordinate the activities of workers who produce camera work and printing plates and cylinders, process film, print text and illustrations on paper, metal and other material, and bind and finish printed products. They are employed by companies that specialize in commercial printing or one of its components, such as binding or colour reproduction, in combined printing and publishing companies, such as newspapers and magazines, and in various establishments in both the public and private sectors that have in-house printing departments.

Example titles

bindery foreman/woman – printing
bindery supervisor – printing
composing room supervisor – printing
film processing supervisor
finishing supervisor – printing
photographic and film processing foreman/woman

platemaking supervisor – printing
preparatory supervisor – printing
prepress supervisor – printing
pressroom supervisor – printing
printing supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule activities of workers who produce camera work and printing plates and cylinders; process film; and print, bind and finish books, newspapers, business forms and other printed products
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Review and approve all job proofs or samples in order to ensure quality of work meets client specifications
- Requisition materials and supplies
- Resolve work problems, provide technical advice and recommend measures to improve productivity and product quality
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hiring and promotions
- Prepare production and other reports
- May set up machines or equipment.

Employment requirements

- Completion of secondary school is required.
- Completion of a college program in graphic arts technology may be required.
- Several years of experience in the work area supervised is usually required.
- Provincial trade certification may be required for some occupations in this unit group.

Additional information

- Progression to management positions, such as department, production or plant manager, is possible with experience.

Classified elsewhere

- Printing plant managers (in 0911 *Manufacturing Managers*)
- Supervisors of desktop publishing operators (in 1211 *Supervisors, General Office and Administrative Support Clerks*)

7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers

This unit group includes roofing, masonry, painting and other construction trade contractors, not elsewhere classified, who own and operate their own business. Supervisors in this unit group supervise and co-ordinate the activities of various tradespersons, installers, repairers and servicers classified in the following minor groups: *Masonry and Plastering Trades* (728), *Other Construction Trades* (729) and *Other Installers, Repairers and Servicers* (744). They are employed by a wide range of establishments; places of employment are indicated in the unit group descriptions. This unit group also includes prefabricated product installation and service contractors and proprietors of some repair and service establishments.

Example titles

bricklaying contractor	pest control supervisor
cement finishing contractor	roofing contractor
foreman/woman, glaziers	supervisor, bicycle repair shop
foreman/woman, insulators	supervisor, painters and decorators
foreman/woman, plasterers	supervisor, tilesetters
painting contractor	

Main duties

Contractors and supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of construction workers engaged in bricklaying, roofing, cement finishing, tilesetting, plastering, drywall installation, glazing, insulating and painting, and workers who install and service prefabricated products in residential and commercial properties, as well as workers who repair a wide variety of products, such as musical instruments, sports equipment, vending machines, bicycles and cameras
- Establish methods to meet work schedules and co-ordinate work activities with other subcontractors
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train workers in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare work progress reports
- May manage the operations of own company
- May also supervise, co-ordinate and schedule the activities of related apprentices, helpers and labourers.

Employment requirements

- Completion of secondary school is usually required.

- Several years of experience in the trade or in the work area supervised are usually required.
- Journeyman/woman trade certification may be required for some occupations in this unit group.

Additional information

- There is little or no mobility among supervisors in this unit group.

Classified elsewhere

- *Contractors and Supervisors, Carpentry Trades* (7215)
- *Contractors and Supervisors, Pipefitting Trades* (7213)
- Electrical contractors and supervisors of electricians (in 7212 *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)
- Ironwork contractors and supervisors of ironworkers (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)

7221 Supervisors, Railway Transport Operations

Supervisors in this unit group supervise and co-ordinate the activities of railway and yard locomotive engineers, railway yard workers and railway labourers. They are employed by railway transport companies.

Example titles

railway transport operations supervisor
road foreman/woman, freight train
stationmaster

trainmaster
yard foreman/woman – railway
yardmaster – railway

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who operate trains, drive locomotives in railway yards and perform other duties related to railway operations
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve performance
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policy
- Recommend personnel actions such as hiring and promotions
- Prepare work reports.

Employment requirements

- Completion of secondary school is usually required.
- A Canadian Rail Operating Rules certificate is required.
- A certificate of the Railway Employee Qualification Standards Regulations is required.
- Several years of railway operations experience are required.

Classified elsewhere

- Supervisors of railway car repairers and locomotive mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)
- Supervisors of railway track maintenance crews (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)

7222 Supervisors, Motor Transport and Other Ground Transit Operators

Supervisors in this unit group supervise and co-ordinate activities of truck drivers, bus drivers, delivery drivers, subway and other transit operators, chauffeurs and taxi and limousine drivers. This unit group also includes bus dispatchers who co-ordinate the activities of transit system bus drivers and subway traffic controllers who operate and monitor signal and track switch control panels. They are employed by motor transportation and ground transit companies and by urban transit systems.

Example titles

bus inspector	subway traffic controller
dispatcher, bus	supervisor, light rail transit (LRT) operators
foreman/woman, truck drivers	supervisor, school bus drivers
foreman/woman, urban transit system	supervisor, subway operators
mobile inspector, transit	

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who operate trucks, buses, subway trains, light rail transit, street cars, taxis and other transport vehicles
- Establish methods to meet work schedules and may co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve performance
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policies
- Recommend personnel actions such as hiring and promotions
- Dispatch bus drivers and monitor routes to ensure schedules are met and to resolve operating problems
- Monitor and operate signal and track switch control panel of subway systems
- Prepare work reports and budgets, and monitor expenditures.

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience as a driver or operator of motor transport or ground transit equipment are usually required.

Additional information

- There is little mobility between occupations in the different transportation sectors of this unit group.

Classified elsewhere

- *Supervisors, Railway Transport Operations (7221)*
- *Train dispatchers (in 2275 Railway Traffic Controllers and Marine Traffic Regulators)*
- *Truck transport and taxi dispatchers (in 1475 Dispatchers and Radio Operators)*

7231 Machinists and Machining and Tooling Inspectors

Machinists set up and operate a variety of machine tools to cut or grind metal, plastic or other materials to make or modify parts or products with precise dimensions. Machining and tooling inspectors inspect machined parts and tooling in order to maintain quality control standards. They are employed by machinery, equipment, motor vehicle, automotive parts, aircraft and other metal products manufacturing companies and by machine shops.

Example titles

automotive machinist

aviation machinist

general machinist

machined parts inspector

machine shop inspector

machining inspector

machinist

machinist apprentice

tooling inspector

Main duties

Machinists perform some or all of the following duties:

- Read and interpret engineering drawings, blueprints, charts and tables or study sample parts to determine machining operation to be performed, and plan best sequence of operations
- Compute dimensions and tolerances and measure and lay out work pieces
- Set up, operate and maintain a variety of machine tools including computer numerically controlled (CNC) tools to perform precision, non-repetitive machining operations such as sawing, turning, milling, boring, planing, drilling, precision grinding and other operations
- Fit and assemble machined metal parts and subassemblies using hand and power tools
- Verify dimensions of products for accuracy and conformance to specifications using precision measuring instruments
- May set up and program machine tools for use by machining tool operators.

Machining and tooling inspectors perform some or all of the following duties:

- Verify dimensions of machined parts or tooling using micrometers, verniers, callipers, height gauges, optical comparators, co-ordinate measuring machines (CMM) or other specialized measuring instruments
- Maintain, repair and calibrate precision measuring instruments such as dial indicators, fixed gauges, height gauges and other measuring devices
- Report deviations from specifications and tolerances to supervisor

- Maintain inspection records and complete inspection reports.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four-year apprenticeship program
or
A combination of over four years of work experience in the trade and some college or industry courses in machining is usually required to be eligible for trade certification.
- Trade certification for machinists is available, but voluntary, in all provinces and territories.
- Trade certification for automotive machinists is available, but voluntary, in Ontario.
- Trade certification for machinists (CNC) is available, but voluntary, in New Brunswick.
- Interprovincial trade certification (Red Seal) is also available to qualified machinists.
- Several years of experience as a machinist, tool and die maker or machining tool operator may be required for machining and tooling inspectors.

Additional information

- Familiarity with exotic and composite materials may be required for machinists in aviation and other advanced manufacturing sectors.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

7231 Machinists and Machining and Tooling Inspectors

Classified elsewhere

- CAD-CAM programmers (in 2233 *Industrial Engineering and Manufacturing Technologists and Technicians*)
- *Machining Tool Operators* (9511)
- *Supervisors, Machinists and Related Occupations* (7211)
- *Tool and Die Makers* (7232)

7232 Tool and Die Makers

Tool and die makers make, repair and modify custom-made, prototype or special tools, dies, jigs, fixtures and gauges using various metals, alloys and plastics which require precise dimensions. They are employed primarily in manufacturing industries such as automobile, aircraft, metal fabrication, electrical machinery and plastics, and in tool and die, mould making and machine shops. This unit group also includes metal patternmakers and metal mould makers.

Example titles

die finisher
die maker
jig maker
metal mould maker
metal patternmaker
metal patternmaker apprentice

mould maker apprentice
mould maker – plastics processing
tool and die maker
tool and die maker apprentice
toolmaker

Main duties

Tool and die makers perform some or all of the following duties:

- Read and interpret engineering drawings and specifications of tools, dies, prototypes or models
 - Prepare templates and sketches, and determine work processes
 - Compute dimensions and tolerances and set up machine tools
 - Position, secure, measure and work metal stock or castings to lay out for machining
 - Set up, operate and maintain a variety of conventional and computer numerically controlled (CNC) machine tools to cut, turn, mill, plane, drill, bore, grind or otherwise shape workpiece to prescribed dimensions and finish
 - Verify machined parts for conformance to specifications using precision measuring instruments such as vernier callipers, micrometers, co-ordinate measuring machines (CMM) and electronic measuring devices
 - Fit and assemble or disassemble parts using hand tools
 - Test completed tools, dies, jigs or fixtures for proper operation
 - May program CNC machine tools.
- Metal patternmakers perform some or all of the following duties:
- Machine, fit and assemble castings and other parts to make precision models of required shape such as metal patterns, core boxes and match plates

- Lay out, shape and assemble patterns of metal, wood, plastic and other materials from blueprints, models or templates

- May program CNC machine tools.

Metal mould makers perform some or all of the following duties:

- Machine, fit and assemble parts to make metal moulds and cores for plastic injection moulding, or other production processes
- May program CNC machine tools.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- or five-year tool and die making apprenticeship program
 - or
 - A combination of over five years of work experience in the trade and some high school, college or industry courses in tool and die making is usually required to be eligible for tool and die trade certification.
- Tool and die making trade certification is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Alberta and British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified tool and die makers.
- Mould makers usually require completion of a four-year apprenticeship or college program in mould making.
- Trade certification for mould makers is available, but voluntary, in Quebec and Ontario.

7232 Tool and Die Makers

- Patternmakers usually require completion of an apprenticeship or college program in patternmaking.
- Patternmaking trade certification is available, but voluntary, in Ontario.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification of tool and die makers allows for interprovincial mobility.

Classified elsewhere

- *Machining Tool Operators* (9511)
- *Machinists and Machining and Tooling Inspectors* (7231)
- Manual and machine mould makers and core makers (in 9412 *Foundry Workers*)
- Supervisors of tool and die makers, metal mould makers and patternmakers (in 7211 *Supervisors, Machinists and Related Occupations*)

7241 Electricians (Except Industrial and Power System)

Electricians in this unit group lay out, assemble, install, test, troubleshoot and repair electrical wiring, fixtures, control devices and related equipment in buildings and other structures. They are employed by electrical contractors and maintenance departments of buildings and other establishments, or they may be self-employed.

Example titles

apprentice electrician
construction electrician
construction electrician apprentice

domestic and rural electrician
electrician

Main duties

Electricians in this unit group perform some or all of the following duties:

- Read and interpret drawings, circuit diagrams and electrical code specifications to determine wiring layouts for new or existing installations
- Pull wire through conduits and through holes in walls and floors
- Install brackets and hangers to support electrical equipment
- Install, replace and repair lighting fixtures and electrical control and distribution equipment, such as switches, relays and circuit breaker panels
- Splice, join and connect wire to fixtures and components to form circuits
- Test continuity of circuits using test equipment to ensure compatibility and safety of system, following installation, replacement or repair
- Troubleshoot and isolate faults in electrical and electronic systems and remove and replace faulty components
- Connect electrical power to audio and visual communication equipment, signalling devices and heating and cooling systems
- Conduct preventive maintenance programs and keep maintenance records.

- Trade certification for construction electricians is compulsory in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Saskatchewan, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon, and available, but voluntary, in Manitoba.
- Trade certification for electricians (domestic and rural) is mandatory in Quebec and Ontario, and available, but voluntary, in Newfoundland and Labrador.
- Interprovincial trade certification (Red Seal) is also available to qualified construction electricians.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Electrical Mechanics (7333)*
- *Industrial Electricians (7242)*
- *Power System Electricians (7243)*
- Supervisors of electricians (in *7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- to five-year apprenticeship program is usually required.

7242 Industrial Electricians

Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. They are employed by electrical contractors and maintenance departments of factories, plants, mines, shipyards and other industrial establishments.

Example titles

electrician, shipyard

industrial electrician

industrial electrician apprentice

marine electrician

mill electrician

mine electrician

plant electrician

plant maintenance electrician

Main duties

Industrial electricians perform some or all of the following duties:

- Read and interpret drawings, blueprints, schematics and electrical code specifications to determine layout of industrial electrical equipment installations
 - Install, examine, replace or repair electrical wiring, receptacles, switch boxes, conduits, feeders, fibre-optic and coaxial cable assemblies, lighting fixtures and other electrical components
 - Test electrical and electronic equipment and components for continuity, current, voltage and resistance
 - Maintain, repair, install and test switchgear, transformers, switchboard meters, regulators and reactors
 - Maintain, repair, test and install electrical motors, generators, alternators, industrial storage batteries and hydraulic and pneumatic electrical control systems
 - Troubleshoot, maintain and repair industrial, electrical and electronic control systems and other related devices
 - Conduct preventive maintenance programs and keep maintenance records
 - May install, maintain and calibrate industrial instrumentation and related devices.
- Completion of a four- or five-year industrial electrician apprenticeship program
or
A combination of over five years of work experience in the trade and some high school, college or industry courses in industrial electrical equipment is usually required to be eligible for trade certification.
- Trade certification for industrial electricians is compulsory in Prince Edward Island, Quebec and the Yukon, and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario and Manitoba.
- Interprovincial trade certification (Red Seal) is also available to qualified industrial electricians.
- Trade certification for marine electricians is available, but voluntary, in New Brunswick.
- Trade certification for mine electricians is available, but voluntary, in Nova Scotia.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Construction electricians (in 7241 *Electricians (Except Industrial and Power System)*)
- *Power System Electricians* (7243)
- Supervisors of industrial electricians (in 7212 *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)

Employment requirements

- Completion of secondary school is usually required.

7243 Power System Electricians

Power system electricians install, maintain, test and repair electrical power generation, transmission and distribution system equipment and apparatus. They are employed by electric power generation, transmission and distribution companies.

Example titles

apprentice power system electrician
power electrician

power station electrician
power system electrician

Main duties

Power system electricians perform some or all of the following duties:

- Install and maintain electrical power distribution equipment such as transformers, generators, voltage regulators, switches, circuit breakers, capacitors, inductors, and supervisory control and data acquisition (SCADA) systems
- Install and maintain electrical equipment and apparatus in generating stations or powerhouses
- Inspect and test installed electrical equipment and apparatus to locate electrical faults and check their operation, using volt meters, ammeters and other electrical test instruments and equipment
- Repair or replace faulty electrical equipment and apparatus
- Complete test and maintenance reports.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four-year apprenticeship program for power system electricians
 - or*
 - A combination of up to four years of work experience in the trade and some college or industry courses in electrical technology is usually required.
- Trade certification is available, but voluntary, in Manitoba, Alberta, the Northwest Territories, Nunavut and the Yukon.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Electrical Mechanics* (7333)
- *Electrical Power Line and Cable Workers* (7244)
- *Electricians (Except Industrial and Power System)* (7241)
- *Industrial Electricians* (7242)
- Supervisors of power system electricians (in 7212 *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)

7244 Electrical Power Line and Cable Workers

Electrical power line and cable workers construct, maintain and repair overhead and underground electrical power transmission and distribution systems. They are employed by electric power generation, transmission and distribution companies, electrical contractors and public utility commissions.

Example titles

apprentice lineman/woman – electric power systems

cable installer – electrical power

cable splicer – electrical power

construction lineman/woman – electrical power line

power lineman/woman

power line patroller

powerline technician

Main duties

Electrical power line and cable workers perform some or all of the following duties:

- Install, maintain, troubleshoot and repair electrical distribution and transmission systems including overhead and underground power lines and cables, insulators, conductors, lightning arrestors, switches, transformers and other associated equipment
- Erect and maintain steel, wood or concrete poles, towers and guy wires
- Splice, solder and insulate conductors and related wiring to connect power distribution and transmission networks using splicing tools, related electrical equipment and tools
- Inspect and test overhead and underground power lines and cables and auxiliary equipment using electrical test equipment
- Climb ladders or operate hydraulic buckets when working aloft on poles and towers, or work in confined spaces such as trenches and tunnels to install power lines and cables and associated equipment
- Install and maintain street lighting systems
- Communicate with other workers to co-ordinate the preparation and completion of work assignments.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a provincial three- or four-year lineman/woman apprenticeship program
 - or
 - A combination of up to four years of work experience in the trade and some high school, college or industry courses in electrical technology is usually required for electrical power line and cable workers.

• Trade certification for powerline technicians is compulsory in Prince Edward Island and British Columbia, and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Saskatchewan, Alberta, Nunavut, the Northwest Territories and the Yukon.

• Trade certification for construction linemen/women is available, but voluntary, in Newfoundland and Labrador, New Brunswick and Ontario.

• Interprovincial trade certification (Red Seal) is available for qualified powerline technicians.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Other linemen/women and cable installers (in *7245 Telecommunications Line and Cable Workers*)
- *Power System Electricians (7243)*
- Supervisors of electrical power line and cable workers (in *7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)

7245 Telecommunications Line and Cable Workers

Telecommunications line and cable workers install, repair and maintain telecommunication lines and cables. They are employed by cable television companies and by telephone and other telecommunications services.

Example titles

apprentice lineman/woman – telecommunications
cable repairer, telecommunications
communication technician – construction
construction technician – cable television

lineman/woman, telecommunications
splicer technician – telephone
telecommunications line installer
telephone line technician

Main duties

Telecommunications line and cable workers perform some or all of the following duties:

- Install, remove, maintain and repair aerial and underground telephone and other telecommunication transmission and distribution lines, cables and associated hardware
- Install (but do not repair or maintain) cable television lines and cables
- Splice and repair various types and sizes of telephone and other telecommunication cables including single line, coaxial and fibre optic
- Inspect and test telecommunication transmission lines and cables for transmission characteristics and to locate faults
- Analyze and record test results
- Climb and work aloft on poles, ladders or other support structures or work in confined spaces such as trenches, tunnels and crawl spaces
- Communicate with other workers to co-ordinate the preparation and completion of work assignments
- Assist in the erection and removal of telecommunication poles, towers and associated support structures
- May operate excavation machinery and other heavy equipment.

- Trade certification for communications electrician (construction craft) is available, but voluntary, in Alberta, Nunavut, the Northwest Territories and the Yukon.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Cable Television Service and Maintenance Technicians (7247)*
- *Electrical Power Line and Cable Workers (7244)*
- Supervisors of telecommunications line and cable workers (in *7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)
- *Telecommunications Installation and Repair Workers (7246)*

Employment requirements

- Completion of secondary school is required.
- Completion of a four-year telecommunications line and cable apprenticeship program
 - or*
 - A combination of over three years work experience in the trade and some industry-related or other specialized courses
 - or*
 - Completion of a two-year college program in electronics is usually required.

7246 Telecommunications Installation and Repair Workers

Telecommunications installation and repair workers install, test, maintain and repair telephones, telephone switching equipment and telecommunications equipment related to transmission and processing of voice, video signals and other data over a variety of media including fibre optics, microwave, radio and satellite. They are employed by telephone and other telecommunications transmission services establishments.

Example titles

apprentice communication electrician – switching
cellular telephone technician
central office technician
communication technician, telephone
exchange tester – telecommunications
line and station installer, telephone

mobile radio installer
private branch exchange (PBX) installer
switch network installer and repairer
telecommunications equipment technician
telephone installer

Main duties

Telephone installers and repairers perform some or all of the following duties:

- Install, arrange, remove and maintain telephone equipment, wiring and associated hardware
- Test installed telephone systems to locate transmission faults
- Repair or replace defective and damaged telephones, wire and associated equipment.

Switch network installers and repairers perform some or all of the following duties:

- Install electromechanical, analog and digital trunking systems, circuits and equipment in telecommunications central offices and switching centres
- Inspect and test trunking systems, circuits and equipment
- Analyze test results and adjust, change or repair switching system, network, associated equipment and software.

Telecommunications service testers perform some or all of the following duties:

- Operate computerized testing systems to conduct service tests on customer lines and equipment
- Determine the nature, cause and location of service trouble
- Initiate the dispatch of appropriate repair personnel
- Complete test reports and maintain test and service records
- May assist repair personnel to test lines, circuits and systems, isolate and clear cable faults and verify records.

Telecommunications equipment technicians perform some or all of the following duties:

- Install, remove and maintain various telecommunications equipment and related systems such as telex and facsimile machines, teletypewriters, mobile radios, cellular telephones, pagers and other related telecommunications equipment
- Configure operating systems and install software for access to the Internet
- Inspect and test operation of telecommunications equipment
- Diagnose and locate equipment faults, and adjust, replace or repair telecommunications equipment.

Employment requirements

- Completion of secondary school is required.
- Telephone and switch network installers and repairers require completion of an apprenticeship program ranging from three to four years
 - or*
 - A combination of over three years work experience in the trade and some high school, college or industry related courses.
- Telecommunications equipment technicians usually require completion of a college electrical and electronics program and several months of on-the-job training
 - or*
 - Completion of a three- or four-year apprenticeship training program.
- Trade certification for communications electrician (network craft) is available, but voluntary, in Alberta, Nunavut, the Northwest Territories and the Yukon.

7246 Telecommunications Installation and Repair Workers

- Experience as an installer and repairer (telephone and switch network) is usually required for service testers.

Classified elsewhere

- *Electronic Service Technicians (Household and Business Equipment)* (2242)
- Supervisors of telecommunication installation and repair workers (in *7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)
- *Telecommunications Line and Cable Workers* (7245)

7247 Cable Television Service and Maintenance Technicians

Cable television service technicians install, maintain and repair cable and satellite television and Internet signal and associated equipment in homes and commercial buildings. Cable television maintenance technicians maintain and repair cable television transmission and distribution systems and associated hardware. They are employed by cable and satellite television companies.

Example titles

apprentice community antenna television (CATV) technician
cable television installer
cablevision servicer
CATV technician

direct broadcast satellite (DBS) technician – cable television
installation technician, cable television
maintenance technician, cable television

Main duties

Cable television service technicians perform some or all of the following duties:

- Communicate with subscribers and company personnel to determine work assignments
- Connect, disconnect and relocate cable outlets, install splitters, converters, decoders, satellite and pay TV equipment, and install other cable hardware and systems at subscriber's premises
- Install cable modems and software to enable Internet access at subscriber's premises
- Inspect, test and repair cable and satellite television signals and associated equipment at subscriber's premises.

Cable television maintenance technicians perform some or all of the following duties:

- Maintain and repair main aerial and underground coaxial and fibre optic cable television transmission lines, trunking and related distribution and interconnecting systems including power supplies and amplifiers
- Inspect, monitor, test and adjust cable transmission and distribution systems
- Repair or replace faulty cables, power supplies, amplifiers and other associated transmission and distribution equipment
- Climb and work aloft on poles, ladders or other support structures
- Communicate with other workers to co-ordinate the preparation and completion of work assignments.

- Completion of a college program in electronics
 - or
 - A combination of college, correspondence or industry courses related to electronics and electrical systems and on-the-job training
 - or
 - Completion of a four-year CATV technician apprenticeship program is required.
- Trade certification for CATV technicians is available, but voluntary, in British Columbia.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Supervisors of cable television service and maintenance technicians (in 7212 *Contractors and Supervisors, Electrical Trades and Telecommunications Occupations*)
- Workers who install aerial or underground cable television lines (in 7245 *Telecommunications Line and Cable Workers*)

Employment requirements

- Completion of secondary school is required.

7251 Plumbers

Plumbers install, repair and maintain pipes, fixtures and other plumbing equipment used for water distribution and waste water disposal in residential, commercial and industrial buildings. They are employed in maintenance departments of factories, plants and similar establishments, by plumbing contractors, or they may be self-employed.

Example titles

maintenance plumber
plumber

plumber apprentice
plumbing mechanic

Main duties

Plumbers perform some or all of the following duties:

- Read blueprints, drawings and specifications to determine layout of plumbing system, water supply network and waste and drainage systems
- Install, repair and maintain domestic, commercial or industrial plumbing fixtures and systems
- Locate and mark positions for pipe connections, passage holes and fixtures in walls and floors
- Cut opening in walls and floors to accommodate pipe and pipe fittings
- Measure, cut, bend and thread pipes using hand and power tools or machines
- Join pipes using couplings, clamps, screws, bolts, cement or soldering, brazing and welding equipment
- Test pipes for leaks using air and water pressure gauges
- May prepare cost estimates.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- to five-year apprenticeship program
 - or*
 - A combination of over five years of work experience in the trade and some high school, college or industry courses in plumbing is usually required to be eligible for trade certification.
- Trade certification is compulsory in Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Saskatchewan, Alberta and British Columbia and available, but voluntary, in Newfoundland and Labrador, Manitoba, Nunavut, the Northwest Territories and the Yukon.

- Interprovincial trade certification (Red Seal) is available to qualified plumbers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Gas Fitters* (7253)
- *Steamfitters, Pipefitters and Sprinkler System Installers* (7252)
- Supervisors of plumbers (in 7213 *Contractors and Supervisors, Pipefitting Trades*)

7252 Steamfitters, Pipefitters and Sprinkler System Installers

Steamfitters and pipefitters lay out, assemble, fabricate, maintain, troubleshoot and repair piping systems carrying water, steam, chemicals and fuel in heating, cooling, lubricating and other process piping systems. Sprinkler system installers fabricate, install, test, maintain and repair water, foam, carbon dioxide and dry chemical sprinkler systems in buildings for fire protection purposes. Steamfitters, pipefitters and sprinkler system installers are employed in maintenance departments of factories, plants and similar establishments, and by pipefitting and sprinkler system contractors, or they may be self-employed.

Example titles

apprentice pipefitter-steamfitter
fire protection mechanic
fire sprinkler fitter
marine pipefitter
pipefitter

sprinkler system fitter
sprinkler system installer
sprinkler system installer apprentice
steamfitter

Main duties

Steamfitters and pipefitters perform some or all of the following duties:

- Read and interpret drawings, blueprints and specifications to determine layout requirements
- Cut openings for pipe in walls, floors and ceilings using hand or power tools or machines
- Select type and size of pipe required
- Measure, cut, thread and bend pipe to required shape using hand and power tools
- Weld, braze, cement, solder and thread joints to join pipes and fabricate sections of piping system
- Install supports, valves, piping and control systems
- Test system for leaks using testing equipment
- Clean and maintain pipe units and fittings and flush system
- Remove and replace worn components and reactivate system
- May prepare cost estimates for clients.

Sprinkler system installers perform some or all of the following duties:

- Read and interpret drawings, specifications and fire codes to determine layout requirements
- Install clamps, brackets and hangers to support piping system and sprinkler and fire protection equipment, using hand and power tools
- Select, measure, cut, ream and thread pipe, install sprinkler heads and mount prepared pipe in supports
- Join pipes and piping sections using soldering and welding equipment

- Connect piping system to water mains, supply tanks, pumps, compressors and control equipment
- Installs valves, alarms and associated equipment
- Test system for leaks using air or liquid pressure equipment
- Service and repair sprinkler system
- May prepare cost estimates for clients.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- to five-year apprenticeship program
or
A combination of over five years of work experience in the trade and some high school, college or industry courses in steamfitting, pipefitting or sprinkler system installation is usually required to be eligible for trade certification.
- Steamfitter-pipefitter trade certification is compulsory in Quebec, Ontario, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories.
- Sprinkler system installer trade certification is compulsory in Quebec and British Columbia and available, but voluntary, in all other provinces and territories.
- Interprovincial trade certification (Red Seal) is also available to qualified steamfitters-pipefitters and sprinkler system installers.

Additional information

- Progression to supervisory positions is possible with experience.

7252 Steamfitters, Pipefitters and Sprinkler System Installers

- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Gas Fitters* (7253)
- *Plumbers* (7251)
- Supervisors of steamfitters, pipefitters and sprinkler system installers (in 7213 *Contractors and Supervisors, Pipefitting Trades*)

7253 Gas Fitters

Gas fitters install, inspect, repair and maintain gas lines and gas equipment such as meters, regulators, heating units and appliances in residential, commercial and industrial establishments. They are employed by gas utility companies and gas servicing companies.

Example titles

gas customer servicer
gas fitter
gas fitter apprentice

gas servicer
gas technician

Main duties

Gas fitters perform some or all of the following duties:

- Study drawings and specifications to determine the layout of the installation and materials required
- Measure and mark reference points for installation of gas lines and equipment
- Install and maintain gas meters and regulators and gas lines between gas unit and gas meter
- Install, maintain and service gas heating units and their components, such as burners, valves and automatic controls
- Repair and service gas appliances and related equipment
- Test and replace defective equipment or components
- Test and adjust control mechanisms and check pipes and piping connections for gas leaks using gas detecting devices
- Attend to gas escape calls and assist in the investigation of gas fires and explosions
- Prepare reports on work performed and condition of facilities
- Advise clients regarding standards, safety features and maintenance of gas units and system
- Convert motor vehicles or appliances to use natural gas fuels.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- or three-year gas fitter apprenticeship program
or
Several years of work experience in a pipefitting trade plus completion of a high school, college or industry gas fitter program are required.

- Gas fitter trade certification is compulsory in Nova Scotia, Quebec, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.

- A provincial gas fitter licence is usually required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Plumbers* (7251)
- *Steamfitters, Pipefitters and Sprinkler System Installers* (7252)
- Supervisors of gas fitters (in *7213 Contractors and Supervisors, Pipefitting Trades*)

7261 Sheet Metal Workers

Sheet metal workers fabricate, assemble, install and repair sheet metal products. They are employed by sheet metal fabrication shops, sheet metal products manufacturing companies, sheet metal work contractors and various industrial sectors.

Example titles

apprentice sheet metal worker
sheet metal fabricator
sheet metal mechanic

sheet metal worker
tinsmith

Main duties

Sheet metal workers perform some or all of the following duties:

- Read engineering and architectural drawings, sketches and work specifications to be performed, and lay out, measure and mark sheet metal according to drawings or templates
- Develop patterns for sheet metal using computer-assisted design and drafting (CAD) software package
- Operate light metalworking machines such as shears, brakes, punches, and drill presses, including computer numerical control (CNC) equipment to cut, bend, punch, drill, shape or straighten sheet metal
- Operate computerized laser or plasma cutting equipment to cut sheet metal
- Install and use rigging and hoisting equipment
- Fit and join sheet metal parts using riveting, welding, soldering and similar equipment to fabricate products such as ventilation shafts, exhaust hoods, eavestroughs, partition frames, air and heat ducts, material handling systems, roof decking and sheet metal buildings
- Install sheet metal products according to specifications and building codes
- Grind and buff seams, joints and rough surfaces
- Inspect product quality and installation to ensure conformance to specifications.

Sheet metal workers may specialize in on-site installation or shop manufacture of sheet metal products, or servicing and maintenance of installed equipment and systems.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a three to five year apprenticeship program
or
A combination of over four years of work experience in the trade and some high school, college or industry courses in sheet metal working is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec, Ontario, Saskatchewan, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories.
- Interprovincial trade certification (Red Seal) is also available to qualified sheet metal workers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Aircraft sheet metal technicians (in 7315 *Aircraft Mechanics and Aircraft Inspectors*)
- Boilermakers (7262)
- Ironworkers (7264)
- Metalworking Machine Operators (9514)
- Structural Metal and Platework Fabricators and Fitters (7263)
- Supervisors of sheet metal workers (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)

7262 Boilermakers

Boilermakers fabricate, assemble, erect, test, maintain and repair boilers, vessels, tanks, towers, heat exchangers and other heavy-metal structures. They are employed in boiler fabrication, manufacturing, shipbuilding, construction, electric power generation and similar industrial establishments.

Example titles

boiler fitter
boiler installer
boilermaker
boilermaker apprentice

construction boilermaker
industrial boilermaker
marine boilermaker
pressure vessel fabricator

Main duties

Boilermakers perform some or all of the following duties:

- Read blueprints or specifications to plan sequence of operation
- Lay out plate, sheet steel or other heavy metal and mark bending and cutting lines on work piece using protractors, compasses and drawing instruments or templates
- Set up and operate heavy-metal working machines such as brakes, rolls, shears, flame cutters and drill presses to cut, shape and form metal into parts or sections
- Fit and weld metal parts or sections together to fabricate boilers, vessels, tanks, heat exchangers, piping and other heavy-metal products
- Erect and install boilers and other heavy-metal products according to specifications using hand and power tools
- Repair and perform maintenance work on boilers and other heavy-metal products
- Direct activities of hoist or crane operators and other workers during fabrication, assembly, installation or repair of structures
- Test finished structures using a variety of methods.

Boilermakers may specialize in rigging and hoisting, preparation and layout, or welding aspects of the trade.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a three- to four-year apprenticeship program
or
A combination of over four years of work experience in the trade and some high school, college or industry courses in boilermaking is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and Alberta and available, but voluntary, in all other provinces.
- Interprovincial trade certification (Red Seal) is also available to qualified boilermakers.

Additional information

- Progression to supervisory positions is possible with experience
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Ironworkers* (7264)
- *Structural Metal and Platework Fabricators and Fitters* (7263)
- Supervisors of boilermakers (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)
- *Welders and Related Machine Operators* (7265)

7263 Structural Metal and Platework Fabricators and Fitters

Structural metal and platework fabricators and fitters fabricate, assemble, fit and install steel or other metal components for buildings, bridges, tanks, towers, boilers, pressure vessels and other similar structures and products. They are employed in structural steel, boiler and platework fabrication plants and by heavy machinery manufacturing and shipbuilding companies.

Example titles

metal fabricator
plater
platework fitter
shipfitter

shipfitter apprentice
steel fabricator
structural steel fitter

Main duties

Structural metal and platework fabricators and fitters perform some or all of the following duties:

- Study engineering drawings and blueprints, determine the materials required, and plan the sequence of tasks to cut metal most efficiently
- Construct patterns and templates as guides for layouts
- Lay out reference points and patterns on heavy metal according to component specifications
- Rig, hoist and move materials to storage areas or within worksite
- Assemble and fit metal sections and plates to form complete units or subunits using tack welding, bolting, riveting or other methods
- Set up and operate various heavy-duty metalworking machines such as brake presses, shears, cutting torches, grinders and drills, including computer numerical control (CNC) equipment, to bend, cut, form, punch, drill or otherwise form heavy-metal components
- Install fabricated components in final product.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program
 - or*
 - A combination of over four years of work experience in the trade and some college or industry courses in structural steel and platework fabrication is usually required to be eligible for trade certification.
- Trade certification is available, but voluntary, in all provinces.
- Trade certification for ship's platers is available, but voluntary, in Newfoundland and Labrador.

- Trade certification for shipfitters and shipwrights is available, but voluntary, in British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified metal fabricators (fitters).

Additional information

- Some structural metal and platework fabricators and fitters may also be certified as skilled welders.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Boilermakers* (7262)
- *Metalworking Machine Operators* (9514)
- Structural steel erectors (in 7264 *Ironworkers*)
- Supervisors of structural metal and platework fabricators and fitters (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)
- *Welders and Related Machine Operators* (7265)

7264 Ironworkers

Ironworkers fabricate, erect, hoist, install, repair and service structural ironwork, precast concrete, concrete reinforcing materials, curtain walls, ornamental iron and other metals used in the construction of buildings, bridges, highways, dams and other structures and equipment. They are employed by construction ironwork contractors.

Example titles

ironworker
ironworker apprentice
ironworker – metal building systems erector

ornamental ironworker
reinforcing ironworker
structural steel erector

Main duties

Ironworkers perform some or all of the following duties:

- Read blueprints and specifications to lay out work
- Unload and position steel units so each piece can be hoisted as needed
- Erect and install scaffolding, hoisting equipment and rigging
- Signal crane operator to position steel units according to blueprints
- Align and weld or bolt steel units in place
- Erect structural and architectural precast concrete components for buildings, bridges, towers and other structures
- Assemble and erect prefabricated metal structures
- Position and secure steel bars or metal mesh in concrete forms to reinforce concrete structures
- Install ornamental and other structural metalwork such as curtain walls, metal stairways, railings and power doors
- Examine structures and equipment for deterioration, defects or non-compliance with specifications
- Dismantle structures and equipment when required.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to three-year apprenticeship program
or
Over three years of work experience in the trade and some high school, college or industry courses in ironworking are usually required to be eligible for trade certification.

- Trade certification is compulsory in Quebec and Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan and British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified ironworkers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Boilermakers* (7262)
- *Structural Metal and Platework Fabricators and Fitters* (7263)
- Supervisors of ironworkers (in *7214 Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)

7265 Welders and Related Machine Operators

Welders operate welding equipment to weld ferrous and non-ferrous metals. This unit group also includes machine operators who operate previously set up production welding, brazing and soldering equipment. They are employed by companies that manufacture structural steel and platework, boilers, heavy machinery, aircraft and ships and other metal products, and by welding contractors and welding shops, or they may be self-employed.

Example titles

aviation welding technician
brazing machine operator
brazing machine setter
electric arc welder
journeyman/woman welder
laser welding operator
pressure vessel welder

production welder
soldering machine operator
spot welder
welder
welder apprentice
welder-fitter

Main duties

Welders perform some or all of the following duties:

- Read and interpret blueprints or welding process specifications
- Operate manual or semi-automatic welding equipment to fuse metal segments using processes such as gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), flux-cored arc welding (FCAW), plasma arc welding (PAW), shielded metal arc welding (SMAW), oxy-acetylene welding (OAW), resistance welding and submerged arc welding (SAW)
- Operate manual or semi-automatic flame-cutting equipment
- Operate brazing and soldering equipment
- Operate metal shaping machines such as brakes, shears and other metal straightening and bending machines
- Repair worn parts of metal products by welding on extra layers.

Welders may specialize in certain types of welding such as custom fabrication, ship building and repair, aerospace precision welding, pressure vessel welding, pipeline construction welding, structural construction welding, or machinery and equipment repair welding.

Welding, brazing and soldering machine operators perform some or all of the following duties:

- Operate previously set up welding machines such as spot, butt and seam resistance or gas and arc welding machines to fabricate or repair metal parts

- Operate previously set up brazing or soldering machines to bond metal parts or to fill holes, indentations and seams of metal articles with solder
- Start up, shut down, adjust and monitor robotic welding production line
- Assist with the maintenance and repair of welding, brazing and soldering equipment
- May adjust welding heads and tooling according to work specifications.

Employment requirements

Welders

- Completion of secondary school is usually required.
- Completion of a three-year apprenticeship program
or
A combination of over three years of work experience in the trade and some college or industry courses in welding is usually required to be eligible for trade certification.

• Trade certification is compulsory in Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Manitoba, Saskatchewan, British Columbia, Nunavut, the Northwest Territories and the Yukon.

- Interprovincial trade certification (Red Seal) is also available to qualified welders.

Welding, brazing and soldering machine operators

- Some secondary school education is required.
- Several months of on-the-job training are usually provided.

7265 Welders and Related Machine Operators

- Experience as a machine operator helper may be required.
- Experience with robotics may be required.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification for welders allows for interprovincial mobility.

Classified elsewhere

- Supervisors of welders in this unit group (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)
- Underwater welders (in 7382 *Commercial Divers*)
- Wave soldering machine operators (in 9483 *Electronics Assemblers, Fabricators, Inspectors and Testers*)
- Welding inspectors (in 2261 *Non-Destructive Testers and Inspectors*)
- Welding technologists (in 2212 *Geological and Mineral Technologists and Technicians*)

7266 Blacksmiths and Die Setters

Blacksmiths forge a variety of metal items, such as tools, chains, wrought iron fixtures, agricultural implements and structural components. Die setters set up forging machines, such as forging presses, drop hammers, forging rolls and upsetters. They are employed primarily by fabricated metal products, machinery and transportation equipment manufacturing companies.

Example titles

anvilsmith
blacksmith
die setter

hammersmith
toolsmith

Main duties

Blacksmiths perform some or all of the following duties:

- Heat metal items in forge
- Hammer, punch, cut or otherwise form metal workpieces into desired shapes and sizes
- Forge special tools from metal or devise special jigs or fixtures
- Temper, harden or anneal forged items
- Shape metal using power forging machinery.

Die setters perform some or all of the following duties:

- Select dies for forging according to work order and specifications
- Position, align and bolt dies to ram and anvil of power presses and hammers
- Check initial operation of forging machine to ensure that machine is set up properly for use by forging machine operators.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training is provided.
- Several years of experience as a forging machine operator may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Agricultural blacksmiths, farriers and horseshoers (in 7383 *Other Trades and Related Occupations*)
- *Forging Machine Operators* (9512)
- Supervisors of blacksmiths and die setters (in 7214 *Contractors and Supervisors, Metal Forming, Shaping and Erecting Trades*)

7271 Carpenters

Carpenters construct, erect, install, maintain and repair structures and components of structures made of wood, wood substitutes, lightweight steel and other materials. They are employed by construction companies, carpentry contractors, and maintenance departments of factories, plants and other establishments, or they may be self-employed.

Example titles

apprentice carpenter

carpenter

finish carpenter

journeyman/woman carpenter

maintenance carpenter

metal framer – carpentry

renovation carpenter

rough carpenter

Main duties

Carpenters perform some or all of the following duties:

- Read and interpret blueprints, drawings and sketches to determine specifications and calculate requirements
- Prepare layouts in conformance to building codes, using measuring tools
- Measure, cut, shape, assemble and join materials made of wood, wood substitutes, lightweight steel and other materials
- Build foundations, install floor beams, lay subflooring and erect walls and roof systems
- Fit and install trim items, such as doors, stairs, moulding and hardware
- Maintain, repair and renovate residences and wooden structures in mills, mines, hospitals, industrial plants and other establishments
- Supervise apprentices and other construction workers
- May prepare cost estimates for clients.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Cabinetmakers* (7272)
- Supervisors of carpenters (in 7215 Contractors and Supervisors, Carpentry Trades)
- *Woodworking Machine Operators* (9513)

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program
or
A combination of over four years of work experience in the trade and some high school, college or industry courses in carpentry is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available but voluntary, in all other provinces and the territories.
- Interprovincial trade certification (Red Seal) is also available to qualified carpenters.

7272 Cabinetmakers

Cabinetmakers use a variety of woods and laminates to construct and repair wooden cabinets, furniture, fixtures and related products. They are employed by furniture manufacturing or repair companies, construction companies and cabinetmaking contractors, or they may be self-employed.

Example titles

cabinetmaker

cabinetmaker apprentice

custom wood furniture maker

furniture cabinetmaker

Main duties

Cabinetmakers perform some or all of the following duties:

- Study plans, specifications or drawings of articles to be made, or prepare specifications
- Mark outlines or dimensions of parts on wood
- Operate woodworking machines, such as power saws, jointers, mortisers and shapers, and use hand tools to cut, shape and form parts and components
- Trim joints and fit parts and subassemblies together to form complete unit using glue and clamps and reinforce joints using nails, screws or other fasteners
- Sand wooden surfaces and apply veneer, stain or polish to finished products
- Repair or restyle wooden furniture, fixtures and related products
- May estimate amount, type and cost of materials required.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four-year apprenticeship program
or

A combination of over four years of work experience in the trade and some high school or college courses in cabinetmaking is usually required to be eligible for trade certification.

- Trade certification is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified cabinetmakers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Carpenters* (7271)
- Supervisors of cabinetmakers (in 7215 *Contractors and Supervisors, Carpentry Trades*)
- *Woodworking Machine Operators* (9513)

7281 Bricklayers

Bricklayers lay bricks, concrete blocks, stone and other similar materials to construct or repair walls, arches, chimneys, fireplaces and other structures in accordance with blueprints and specifications. They are employed by construction companies and bricklaying contractors or they may be self-employed.

Example titles

apprentice bricklayer
bricklayer
brickmason

refractory bricklayer
stonecutter
stonemason

Main duties

Bricklayers perform some or all of the following duties:

- Read sketches and blueprints to calculate materials required
- Cut and trim bricks and concrete blocks to specification using hand and power tools
- Prepare and lay bricks, concrete blocks, stone, structural tiles and similar materials to construct or repair walls, foundations and other structures in residential, industrial and commercial construction
- Lay bricks or other masonry units to build residential or commercial chimneys and fireplaces
- Lay radial bricks to build masonry shells of industrial chimneys
- Lay or install firebricks to line industrial chimneys and smokestacks
- Line or reline furnaces, kilns, boilers and similar installations using refractory or acid-resistant bricks, refractory concretes, plastic refractories and other materials
- Lay bricks, stone or similar materials to provide veneer facing to walls or other surfaces
- Construct and install prefabricated masonry units
- Lay bricks or other masonry units to build patios, garden walls and other decorative installations
- May restore, clean or paint existing masonry structures.

- Completion of a three- to four-year apprenticeship program
or
A combination of over four years of work experience in the trade and some high school, college or industry courses in bricklaying is usually required to be eligible for trade certification.
- Trade certification for bricklayers is compulsory in Nova Scotia, New Brunswick and Quebec and available, but voluntary, in all other provinces and the Yukon.
- Trade certification for stonemasons is available, but voluntary, in Newfoundland and Labrador.
- Interprovincial trade certification (Red Seal) is also available to qualified bricklayers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Concrete Finishers* (7282)
- Supervisors of bricklayers (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)
- *Tilesetters* (7283)

Employment requirements

- Completion of secondary school is usually required.

7282 Concrete Finishers

Concrete finishers smooth and finish freshly poured concrete, apply curing or surface treatments and install, maintain and restore various masonry structures such as foundations, floors, ceilings, sidewalks, roads, patios and highrise buildings. They are employed by construction companies, cement and concrete contractors and manufacturers of precast concrete products, or they may be self-employed.

Example titles

cement finisher apprentice
cement mason
concrete finisher

concrete mason
precast concrete finisher

Main duties

Concrete finishers perform some or all of the following duties:

- Check formwork, granular base and steel reinforcement materials and direct placement of concrete into forms or onto surfaces according to grade
- Fill hollows and remove high spots to smooth freshly poured concrete
- Operate power vibrator to compact concrete
- Level top surface of concrete according to grade and depth specifications using straightedge or float
- Impart desired finish to concrete surfaces using hand and power tools
- Install anchor bolts, steel plates, door sills and other fixtures in freshly poured concrete
- Apply hardening and sealing compounds to cure surface of concrete
- Waterproof, damp-proof and restore concrete surfaces
- Repair, resurface and replace worn or damaged sections of floors, walls, roads and other concrete structures.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to four-year apprenticeship program
 - or*
 - Over three years of work experience in the trade and some high school, college or industry courses in cement finishing are usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in all other provinces.
- Interprovincial trade certification (Red Seal) is also available to qualified concrete finishers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Bricklayers* (7281)
- Concrete products machine operators (in 9414 *Concrete, Clay and Stone Forming Operators*)
- Supervisors of concrete finishers (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

7283 Tilesetters

Tilesetters cover interior and exterior walls, floors and ceilings with ceramic, marble and quarry tile, mosaics or terrazzo. They are employed by construction companies and masonry contractors, or they may be self-employed.

Example titles

apprentice tilesetter
ceramic tile installer
marble setter
terrazzo polisher

terrazzo worker
tile installer
tilesetter

Main duties

Tilesetters perform some or all of the following duties:

- Prepare, measure and mark surface to be covered
- Build underbeds and install anchor bolts, wires and brackets
- Mix, apply and spread mortar, cement, mastic, glue or other adhesives using hand trowel
- Set tiles in position and apply pressure to affix tiles to base
- Align and straighten tile using levels, squares and straightedges
- Cut and fit tiles around obstacles and openings using hand and power cutting tools
- Pack grout into joints between tiles and remove excess grout
- Install tile strips
- Lay and set mosaic tiles to create decorative wall, mural and floor designs
- Mix, lay and polish terra surfaces
- Cut, polish and install marble and granite
- Remove and replace cracked or damaged tiles
- May prepare cost estimates and orders.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- or four-year apprenticeship program
or
A combination of over three years of work experience in the trade and some high school, college or industry courses in tilesetting is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in Saskatchewan, Alberta and British Columbia.

Additional information

- In provinces where there is no apprenticeship, this trade is usually learned through several years of on-the-job training.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Bricklayers (7281)*
- *Plasterers, Drywall Installers and Finishers and Lathers (7284)*
- Supervisors of tilesetters (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

7284 Plasterers, Drywall Installers and Finishers and Lathers

Plasterers apply finish, and maintain and restore plaster or similar materials, on interior and exterior walls, ceilings and building partitions to produce plain or decorative surfaces. Drywall installers and finishers install and finish drywall sheets and various types of ceiling systems. Lathers install support framework for ceiling systems, interior and exterior walls and building partitions. They are employed by construction companies and by plastering, drywalling and lathing contractors, or they may be self-employed.

Example titles

acoustical ceiling installer

lather

ceiling installer

lather apprentice

drywall applicator

plasterer

drywall finisher

plasterer apprentice

drywall installer and finisher apprentice

sheetrock applicator

drywall taper

wood lather

interior systems mechanic

Main duties

Plasterers perform some or all of the following duties:

- Clean and prepare surfaces
- Mix plaster ingredients in trough to desired consistency
- Apply, level and smooth coats of plaster using trowels, floats, brushes and spraying equipment
- Trowel or spray coats of stucco over exteriors of buildings to form weatherproof surfaces
- Finish corners and angles and create decorative designs in finish coat, if required
- Cure freshly plastered surfaces
- Mould and install ornamental plaster panels, cornices and trim
- Spray acoustic materials or texture finish over walls and ceilings.

Drywall installers and finishers perform some or all of the following duties:

- Measure, cut and fit drywall sheets for installation on walls and ceilings
- Position and secure sheets to metal or wooden studs or joists
- Cut and install metal corner beads to protect exterior corners
- Fill joints, nail indentations, holes and cracks with joint compound using trowel and broad knife
- Tape over joints using taping machine and embed tape in compound
- Smooth out excess compound and allow coat to dry

- Apply successive coats of compound and sand seams and joints
- Fabricate and install suspended metal ceiling grids and place in panels to form acoustical and coffered ceilings.

Lathers perform some or all of the following duties:

- Prepare wall and ceiling layouts
- Install metal stud framing and furring for interior drywall or plaster walls and ceilings, using hand and power tools
- Attach metal or gypsum lath to studs or furring using nails, screws, clips or wire ties
- Cut openings in lath for heating and ventilation piping, ducts and electrical outlets
- Install corner beads and wire mesh around beams to which plaster is to be applied
- May install acoustic tile, hangers for suspended ceilings and metal studs for composition wallboard or lath.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- or four-year apprenticeship program in plastering, drywalling or lathing
or
A combination of over three years of work experience and some high school, college or industry courses in plastering, drywalling or lathing is usually required.
- Plasterer trade certification is compulsory in Quebec and available, but voluntary, in Saskatchewan and British Columbia.

7284 Plasterers, Drywall Installers and Finishers and Lathers

- Drywall installer and finisher trade certification is available, but voluntary, in British Columbia.
- Lather trade certification is compulsory in Quebec and available, but voluntary, in all other provinces and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified lathers (interior systems mechanic).

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification for lathers (interior systems mechanic) allows for interprovincial mobility.

Classified elsewhere

- Supervisors of trade workers in this unit group (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

7291 Roofers and Shinglers

Roofers install, repair or replace flat roofs and shingles, shakes or other roofing tiles on sloped roofs. Shinglers install and replace shingles, tiles and similar coverings on sloped roofs. They are employed by roofing and general contractors, or they may be self-employed.

Example titles

apprentice roofer
asphalt roofer
built-up roofer
flat roofer

residential steep roofer
roofer
shingler
single-ply roofer

Main duties

Roofers perform some or all of the following duties:

- Install, repair or replace built-up roofing systems using materials such as asphalt saturated felts and hot asphalt and gravel
- Install, repair or replace single-ply roofing system using waterproof sheet materials such as modified plastics, elastomeric or other asphaltic compositions
- Install, repair or replace shingles, shakes and other roofing tiles on sloped roofs of buildings
- Install sheet metal flashings
- Apply waterproof coatings to concrete or other masonry surfaces below or above ground level
- Install and repair metal roofs using hand and power tools
- Set up scaffolding to provide safe access to roofs
- May estimate materials required and quote costs.

Shinglers perform some or all of the following duties:

- Install or replace asphalt shingles, wood shingles and shakes and masonry or baked clay roofing tiles on sloped roofs of buildings
- Set up scaffolding to provide safe access to roofs.

- Roofing trade certification is compulsory in Quebec and British Columbia and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Manitoba, Saskatchewan, Alberta, Nunavut, Northwest Territories and the Yukon.
- Trade certification for residential steep roofers is available, but voluntary, in British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified roofers.
- Shinglers require one to two years of on-the-job training.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification for roofers allows for interprovincial mobility.

Classified elsewhere

- Supervisors of roofers and shinglers (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

Employment requirements

- Completion of secondary school is usually required.
- For roofers, completion of a two- to three-year apprenticeship program
or

Over three years of work experience in the trade are usually required to be eligible for trade certification.

7292 Glaziers

Glaziers cut, fit, install and replace glass in residential, commercial and industrial buildings, on exterior walls of buildings and other structures and in furniture and other products. They are employed by construction glass installation contractors, retail service and repair shops and glass fabrication shops, or they may be self-employed.

Example titles

glazier
glazier and metal mechanic
glazier apprentice

plate glass installer
stained glass glazier
structural glass glazier

Main duties

Glaziers perform some or all of the following duties:

- Read and interpret blueprints and specifications to determine type and thickness of glass, frame, installation procedure and materials required
- Measure and mark glass and cut glass using glass cutters or computerized cutter
- Tint glass and create patterns on glass by etching, sandblasting or painting designs
- Assemble, erect and dismantle scaffolds, rigging and hoisting equipment
- Position glass panes into frames and secure glass using clips, points or mouldings
- Assemble and install prefabricated glass, mirrors or glass products on walls, ceilings or exteriors of building
- Fabricate metal frames for glass installation
- Install, fit, fabricate and attach architectural metals or related substitute products in commercial and residential buildings
- Install pre-cut mirrors and opaque and transparent glass panels in frames to form exterior walls of buildings
- Replace glass in furniture and other products
- Prepare and install skylights, showcases and aquariums and stained or other special glass in churches, museums, sports and other establishments
- Repair and service residential windows, commercial aluminum doors and other glass supporting structures, and replace damaged glass or faulty sealant
- May prepare cost estimates for customers or clients.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- or four-year apprenticeship program
 - or
 - A combination of over four years of work experience in the trade and some high school, college or industry courses in glazing is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in all other provinces and territories.
- Interprovincial trade certification (Red Seal) is also available to qualified glaziers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Glass Forming and Finishing Machine Operators and Glass Cutters (9413)*
- *Supervisors of glaziers (in 7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers)*

7293 Insulators

Insulators apply insulation materials to plumbing, air-handling, heating, cooling and refrigeration systems, piping equipment and pressure vessels, and walls, floors and ceilings of buildings and other structures, to prevent or reduce the passage of heat, cold, sound or fire. They are employed by construction companies and insulation contractors, or they may be self-employed.

Example titles

boiler and pipe insulator
building insulator
firestopping insulator
heat and frost insulator
insulation applicator

insulation mechanic
insulator
insulator apprentice
sound insulator

Main duties

Insulators perform some or all of the following duties:

- Read and interpret drawings and specifications to determine insulation requirements and select type of insulation required
- Measure and cut insulating material to required dimensions using hand and power tools
- Apply and secure insulation using spraying, blowing, pasting, strapping, taping and other application and installation methods
- Fit insulation around obstructions and between studs and joists
- Install vapour barriers
- Apply waterproofing cement over insulating materials to finish surfaces
- Remove asbestos or urea-formaldehyde insulation from buildings when required.

- Interprovincial trade certification (Red Seal) is also available to qualified insulators (heat and frost).

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Supervisors of insulators (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program
 - or
 - A combination of over four years of work experience in the trade and some high school, college or industry courses in insulating is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Saskatchewan, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.

7294 Painters and Decorators

Painters and decorators apply paint, wallpaper and other finishes to interior and exterior surfaces of buildings and other structures. They are employed by construction companies, painting contractors and building maintenance contractors, or they may be self-employed.

Example titles

construction painter
maintenance painter
painter

painter and decorator
painter and decorator apprentice
paperhanger

Main duties

Painters and decorators perform some or all of the following duties:

- Read specifications to determine quantities of materials required
- Prepare and clean surfaces using methods such as scraping, sanding, sandblasting, hydro-blasting and steam-cleaning; remove old wallpaper and loose paint; repair cracks and holes in walls; and sandpaper and apply sealer
- Mix and thin paint to obtain desired colour and texture
- Apply paint or other materials, such as stains, lacquer, enamel, oil, varnish, fibreglass, metal coating or fire retardant using brushes, rollers or spray equipment
- Measure, cut and apply wallpaper or fabric to walls
- Assemble and erect scaffolding and swing stages
- Advise customer on selection of colour schemes and choice of wall coverings
- May provide cost estimates to clients.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program
or
Over three years of work experience in the trade is usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in all other provinces and the territories.
- Interprovincial trade certification (Red Seal) is also available to qualified painters and decorators.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Automotive painters (in 7322 *Motor Vehicle Body Repairers*)
- Interior decorators (in 6421 *Retail Salespersons and Sales Clerks*)
- *Painters and Coaters – Industrial* (9496)
- *Painters, Sculptors and Other Visual Artists* (5136)
- Supervisors of painters and decorators (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

7295 Floor Covering Installers

Floor covering installers install carpet, wood, linoleum, vinyl and other resilient floor coverings in residential, commercial, industrial and institutional buildings. They are employed by construction companies, floor-covering contractors and carpet outlets, or they may be self-employed.

Example titles

carpet installer
carpet layer
floor covering installer
floor covering installer apprentice

floor covering mechanic
hardwood floor layer
resilient floor installer
vinyl floor installer

Main duties

Floor covering installers perform some or all of the following duties:

- Inspect, measure and mark surfaces to be covered
- Measure, cut and fasten underlay and underpadding
- Measure, cut and install carpeting using hand or machine stitcher, seaming iron, bonding tape or other bonding materials
- Stretch carpeting using knee-kicker or power stretcher and secure carpeting to floor or other surfaces using staple gun or other devices
- Measure, cut and install resilient floor covering using adhesive, rollers and other hand tools
- Install hardwood floors, such as strip floors, block floors or plank floors, using glue, staples, nails or other means
- Inspect and repair damaged floor coverings
- May estimate material and labour costs.

- Interprovincial trade certification (Red Seal) is also available to qualified floor covering installers.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Supervisors of floor covering installers (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to three-year apprenticeship program
 - or
 - Over four years of work experience in the trade and some courses in floor covering installation are usually required to be eligible for trade certification.
- Trade certification is compulsory in Quebec and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Manitoba, Saskatchewan, Alberta, British Columbia, Nunavut and the Northwest Territories.
- Trade certification for hardwood floor layers is available, but voluntary, in British Columbia.

7311 Construction Millwrights and Industrial Mechanics (Except Textile)

Construction millwrights and industrial mechanics install, maintain, troubleshoot and repair stationary industrial machinery and mechanical equipment. Construction millwrights are employed by millwrighting contractors. Industrial mechanics are employed in manufacturing plants, utilities and other industrial establishments.

Example titles

construction millwright

industrial mechanic

industrial mechanic apprentice

maintenance millwright

millwright

millwright apprentice

plant equipment mechanic

treatment plant maintenance mechanic

Main duties

Construction millwrights and industrial mechanics perform some or all of the following duties:

- Read blueprints, diagrams and schematic drawings to determine work procedures
- Install, align, dismantle and move stationary industrial machinery and mechanical equipment, such as pumps, fans, tanks, conveyors, furnaces and generators according to layout plans using hand and power tools
- Operate hoisting and lifting devices such as cranes, jacks and tractors to position machinery and parts during the installation, set-up and repair of machinery
- Inspect and examine machinery and equipment to detect and investigate irregularities and malfunctions
- Install, troubleshoot and maintain power transmission, vacuum, hydraulic and pneumatic systems, and programmable logic controls
- Adjust machinery and repair or replace defective parts
- Operate machine tools such as lathes and grinders to fabricate parts required during overhaul, maintenance or set-up of machinery
- Clean, lubricate and perform other routine maintenance work on machinery
- Construct foundations for machinery or direct other workers to construct foundations
- Assemble machinery and equipment prior to installation using hand and power tools and welding equipment.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a three- to four-year apprenticeship program
or
A combination of over five years of work experience in the trade and some high school, college or industry courses in industrial machinery repair or millwrighting is usually required to be eligible for trade certification.
- Industrial mechanic trade certification is compulsory in Quebec and available, but voluntary, in all other provinces and territories.
- Construction millwright trade certification is available, but voluntary, in Ontario.
- Interprovincial trade certification (Red Seal) is also available to qualified industrial mechanics or millwrights.

Additional information

- Construction millwrights are mostly engaged in the initial installation of industrial plant machinery and equipment; industrial mechanics are more concerned with the post-installation maintenance and repair of machinery and equipment.
- Industrial mechanics and millwrights may be cross-trained in a second trade such as pipefitting, welding, machining or electrical maintenance.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

7311 Construction Millwrights and Industrial Mechanics (Except Textile)

Classified elsewhere

- *Heavy-Duty Equipment Mechanics* (7312)
- *Industrial Instrument Technicians and Mechanics* (2243)
- Supervisors of industrial mechanics and millwrights (in 7216 *Contractors and Supervisors, Mechanic Trades*)
- *Textile Machinery Mechanics and Repairers* (7317)

7312 Heavy-Duty Equipment Mechanics

Heavy-duty equipment mechanics repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in construction, transportation, forestry, mining, oil and gas, material handling, landscaping, land clearing, farming and similar activities. They are employed by companies which own and operate heavy equipment, and by heavy equipment dealers, rental and service establishments, and railway transport companies and urban transit systems.

Example titles

construction equipment mechanic
diesel mechanic – heavy equipment
farm equipment mechanic
heavy-duty equipment mechanic apprentice
heavy-duty equipment technician

heavy equipment mechanic
heavy mobile logging equipment mechanic
heavy mobile mining equipment mechanic
locomotive mechanic
tractor mechanic

Main duties

Heavy-duty equipment mechanics perform some or all of the following duties:

- Check bulldozers, cranes, graders and other heavy construction, agricultural, logging and mining equipment for proper performance and inspect equipment to detect faults and malfunctions
- Diagnose faults or malfunctions using computerized and other testing equipment to determine extent of repair required
- Adjust equipment and repair or replace defective parts, components or systems, using hand and power tools
- Test repaired equipment for proper performance and to ensure that work meets manufacturers' specifications
- Clean, lubricate and perform other routine maintenance work on equipment
- Service attachments and working tools such as harvesting and tillage equipment, blades, ploughs, winches and side booms
- May perform repair work on heavy trucks
- May attach components and adjust new farm equipment.

Heavy-duty and farm equipment mechanics may specialize in specific types of machinery such as combines or tracked vehicles, or in engine overhaul, power shift transmissions, fuel injection, hydraulics or electronics.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a three- to five-year apprenticeship program
or
A combination of over four years of work experience in the trade and some high school, college or industry courses in heavy equipment repair is usually required to be eligible for trade certification.
- Heavy-duty equipment mechanic trade certification is compulsory in Quebec and Alberta and available, but voluntary, in all other provinces and the territories.
- Farm equipment mechanic trade certification is available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified heavy-duty equipment technicians and farm equipment mechanics.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Construction Millwrights and Industrial Mechanics (Except Textile) (7311)*
- Motor vehicle diesel engine mechanics (in 7321 *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers*)
- Supervisors of heavy equipment mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7313 Refrigeration and Air Conditioning Mechanics

Refrigeration and air conditioning mechanics install, maintain, repair and overhaul residential central air conditioning systems, commercial and industrial refrigeration and air conditioning systems and combined heating, ventilation and cooling systems. They are employed by refrigeration and air conditioning installation contractors, various industrial settings, food wholesalers, engineering firms and retail and servicing establishments. Transport refrigeration mechanics are included in this unit group.

Example titles

central air conditioning mechanic
commercial air conditioning mechanic
heating and cooling mechanic
heating, ventilation and air conditioning (HVAC)
mechanic

refrigeration and air conditioning mechanic
apprentice
refrigeration mechanic
transport refrigeration mechanic

Main duties

Refrigeration and air conditioning mechanics perform some or all of the following duties:

- Read and interpret blueprints, drawings or other specifications
- Measure and lay out reference points for installation
- Assemble and install refrigeration or air conditioning components such as motors, controls, gauges, valves, circulating pumps, condensers, humidifiers, evaporators and compressors using hand and power tools
- Measure and cut piping, and connect piping using welding and brazing equipment
- Install, troubleshoot and overhaul entire heating, ventilation, air handling, refrigeration and air conditioning systems
- Start up system and test for leaks using testing devices
- Recharge system with refrigerant, check and test regulators, calibrate system and perform routine maintenance or servicing
- Repair and replace parts and components for entire refrigeration, air conditioning, ventilation or heat pump systems
- May install, maintain and repair equipment in refrigerated trucks used to transport food or medical supplies
- May prepare work estimates for clients.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a three- to five-year apprenticeship program
or
A combination of over five years of work experience in the trade and some high school, college or industry courses in refrigeration and air conditioning repair is usually required to be eligible for trade certification.
- Trade certification for refrigeration and air conditioning mechanics is compulsory in Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories.
- Trade certification for transport refrigeration mechanics is available, but voluntary, in New Brunswick, Alberta and British Columbia.
- Interprovincial trade certification (Red Seal) is also available to qualified refrigeration and air conditioning mechanics.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Domestic refrigerator or window air conditioner servicers and repairers (in 7332 *Electric Appliance Servicers and Repairers*)
- Supervisors of refrigeration and air conditioning mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7314 Railway Carmen/women

Railway carmen/women inspect, troubleshoot, maintain and repair structural and mechanical components of railway freight, passenger and urban transit rail cars. They are employed by railway transport companies and urban transit systems.

Example titles

rail vehicle mechanic
railway car inspector
railway carman/woman

railway carman/woman apprentice
streetcar and subway car mechanic

Main duties

Railway carmen/women perform some or all of the following duties:

- Inspect interior and exterior components of freight, passenger and urban transit rail cars to determine defects and extent of wear and damage
- Repair and install railway car parts such as compressors, air valves, bearings, couplings, air cylinders and piping
- Repair and maintain electrical and electronic controls for propulsion and braking systems
- Repair defective or damaged metal and wood components, using hand and power tools
- Repair and repaint wooden fixtures
- Replace damaged windows and repair upholstery
- Test and adjust parts using testing gauges and other test equipment
- Perform and document routine maintenance.

Employment requirements

- Completion of secondary school is usually required.
- Completion of an internal company apprenticeship program or three to four years of on-the-job training is usually required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Locomotive mechanics (in *7312 Heavy-Duty Equipment Mechanics*)
- Railway car repairer foremen/women (in *7216 Contractors and Supervisors, Mechanic Trades*)

7316 Machine Fitters

Machine fitters fit, assemble and otherwise build heavy industrial machinery and transportation equipment, including aircraft engines. They are employed in industrial machinery and transportation equipment manufacturing industries.

Example titles

aircraft engine fitter

assembly fitter

heavy equipment fitter

machine builder

machine fitter

machine tool builder

mechanical fitter

Main duties

Machine fitters perform some or all of the following duties:

- Read and interpret blueprints, sketches and diagrams to determine assembly operations
- Fit and assemble prefabricated metal parts to build heavy industrial machinery and equipment such as construction, farming, and processing machinery, railway vehicles and aircraft engines
- Move and align subassemblies and components using lifting and transporting devices such as overhead cranes
- Install major components such as gears, pumps, motors or hydraulic assemblies
- Inspect parts, subassemblies and finished products to ensure quality.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a mechanical apprenticeship program, such as millwrighting, machining, pipefitting, automotive service or heavy equipment repair
 - or*
 - Completion of a four-year machine fitter apprenticeship program
 - or*
 - Completion of five years of on-the-job training is usually required.
- Completion of a two- to three-year college program in aircraft manufacturing or general fabrication is required for aircraft engine fitters.
- Certification in a related trade may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Aircraft assemblers (in 9481 *Aircraft Assemblers and Aircraft Assembly Inspectors*)
- Assemblers of electrical industrial equipment (in 9485 *Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers*)
- Mechanical Assemblers and Inspectors (9486)
- Millwrights (in 7311 *Construction Millwrights and Industrial Mechanics (Except Textile)*)
- Supervisors of machine fitters (in 7216 *Contractors and Supervisors, Mechanic Trades*)
- Welders and Related Machine Operators (7265)

7317 Textile Machinery Mechanics and Repairers

Textile machinery mechanics and repairers install, maintain, repair, overhaul and set up textile machinery such as looms, knitting machines, spinning frames and carding machines. They are employed by textile manufacturing companies.

Example titles

card fixer
card grinder
fixer, textile machinery
knitting machine mechanic
loom fixer

loom technician
mechanic, textile machines
open-end technician
spinning fixer
textile fixer

Main duties

Textile machinery mechanics and repairers perform some or all of the following duties:

- Repair and overhaul electrical and mechanical systems on textile machinery
- Adjust and set up complex machinery for new patterns or products
- Perform maintenance such as cleaning and lubrication of textile machinery, and replace and align moving parts as required
- Recommend equipment changes or modifications and evaluate new equipment
- Troubleshoot, test run and verify machine for proper operation.

Employment requirements

- Completion of secondary school is usually required.
- Up to three years of on-the-job training
or
Several years of experience as a mechanic in other industries are usually required.
- Mechanics hired from other industries may require additional training in textile processes.
- Experience as a textile operator, such as weaver or tufting operator, may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Industrial mechanics or millwrights (in 7311 *Construction Millwrights and Industrial Mechanics (Except Textile)*)
- Supervisors of textile machinery mechanics and repairers (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7318 Elevator Constructors and Mechanics

Elevator constructors and mechanics assemble, install, maintain and repair freight and passenger elevators, escalators, moving walkways and other related equipment. They are employed by elevator construction and maintenance companies.

Example titles

elevator constructor
elevator mechanic

elevator mechanic apprentice
escalator repairer

Main duties

Elevator constructors and mechanics perform some or all of the following duties:

- Read and interpret blueprints to determine layout of system components
- Perform preparatory construction work including steel work, wiring and piping
- Install elevators, escalators, moving walkways, dumbwaiters and related equipment according to specifications
- Connect car frames to counterweights with cables and assemble elevator cars
- Install and wire electric and electronic control system devices
- Install, test and adjust safety control devices
- Test operation of newly installed equipment
- Troubleshoot electrical or mechanical systems failures
- Disassemble defective units and repair or replace worn or suspect parts
- Adjust valves, ratchets, seals, brake linings and other components
- Carry out preventative maintenance programs to ensure public safety.

Elevator constructors and mechanics may specialize in construction, maintenance or repair.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a four- to five-year apprenticeship program
 - or*
 - A combination of over four years of work experience in the trade and some high school, college or industry courses in elevator construction or repair is usually required to be eligible for trade certification.

- Elevator constructor and mechanic trade certification is compulsory in Quebec and Alberta and available, but voluntary, in British Columbia, Nunavut and the Northwest Territories.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Elevator inspectors (in 2262 *Engineering Inspectors and Regulatory Officers*)
- Supervisors of elevator constructors and mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7321 Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers

Automotive service technicians and truck and bus mechanics inspect, diagnose, repair and service mechanical, electrical and electronic systems and components of cars, buses, and light and commercial transport trucks. They are employed by motor vehicle dealers, garages, truck and trailer dealerships, fleet maintenance companies, and service stations, automotive specialty shops, transportation companies and retail establishments which have automotive service shops. This unit group also includes mechanical repairers who perform major repairs and replacement of mechanical units on newly assembled motor vehicles. They are employed by motor vehicle manufacturing companies.

Example titles

automobile mechanic
automotive service technician
automotive service technician apprentice
bus mechanic
car mechanic
mechanical upgrader – motor vehicle manufacturing

motor repairer – motor vehicle manufacturing
motor vehicle mechanic
transmission mechanic
truck and transport mechanic
truck-trailer repairer
tune-up specialist – motor vehicle

Main duties

Automotive service technicians perform some or all of the following duties:

- Review work orders and discuss work with supervisor
- Inspect motor in operation, road test motor vehicle, and test automotive systems and components using computerized diagnostic and other testing devices to diagnose and isolate faults
- Adjust, repair or replace parts and components of automotive systems including fuel system, brakes, steering and suspension, engine and drive train, emission control and exhaust, cooling and climate control, and electrical and electronic systems using hand tools and other specialized automotive repair equipment
- Test and adjust repaired systems to manufacturer's performance specifications
- Perform scheduled maintenance service, such as oil changes, lubrications and tune ups
- Advise customers on work performed, general vehicle condition and future repair requirements.

Mechanical repairers, motor vehicle manufacturing, perform some or all of the following duties:

- Inspect and test mechanical units, such as engines, transmissions, axles and brake systems, to locate faults and malfunctions
- Diagnose faults or malfunctions and confirm findings with supervisor to determine whether to repair or replace unit

- Repair or replace mechanical units or components using hand and power tools
- Test and adjust units to specifications for proper performance
- Complete reports to record problems and work performed.

Truck and transport and truck-trailer mechanics perform some or all of the following duties:

- Adjust, repair or replace parts and components of commercial transport truck systems including chassis, frame, cab, body, engine and drive train, air brakes, steering, and fuel, hydraulic, electrical and electronic systems
- Adjust, repair or replace parts and components of truck-trailer systems including structural, brake and electrical systems.

Workers in this unit group may specialize in the following areas: engine and fuel systems, transmission systems, air conditioning, cooling and heating systems, steering, alignment, brakes, drive lines, suspension, electrical and electronic systems, truck-trailer repair or diagnostic services.

Employment requirements

Automotive service technicians

- Completion of secondary school is usually required.

7321 Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers

- Completion of a four-year automotive service technician apprenticeship program
 - or
 - A combination of over four years of work experience in the trade and high school, college or industry courses in automotive technology is required to be eligible for trade certification.
- Automotive service technician trade certification is compulsory in Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories.
- Automotive service technician (fuel, electrical and electronic systems) and automotive service technician (transmission) trade certification is compulsory in New Brunswick and Ontario and available, but voluntary, in Prince Edward Island.
- Automotive service technician (steering, suspension and brakes) trade certification is compulsory in New Brunswick and Ontario.
- Motor vehicle repair (service station mechanic) trade certification is compulsory in Nova Scotia and available, but voluntary, in Prince Edward Island.
- Interprovincial trade certification (Red Seal) is also available to qualified automotive service technicians.

Mechanical repairers, motor vehicle manufacturing

- Completion of secondary school is usually required.
- On-the-job training of two to three years is provided by employers.

Truck and transport and truck-trailer mechanics

- Completion of secondary school is usually required.
- Completion of a four-year truck and transport mechanic or truck-trailer repair apprenticeship
 - or
 - A combination of over four years of work experience in the trade and high school, college or industry courses in truck or heavy-duty equipment mechanics is required to be eligible for trade certification.

- Truck and transport mechanic trade certification is compulsory in Nova Scotia and Ontario and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, New Brunswick, Quebec, Manitoba, Saskatchewan, British Columbia and the Yukon.
- Truck-trailer repair trade certification is compulsory in Ontario and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Manitoba, British Columbia and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified truck-trailer repairers and truck and transport mechanics.

Additional information

- With additional training, mobility is possible between automobile and truck and transport mechanics.
- With experience, mechanics and technicians in this unit group may progress to supervisory positions.
- Mechanical repairers employed in motor vehicle manufacturing may progress to motor vehicle mechanic positions through an apprenticeship program, or with experience, they may progress to supervisory positions in motor vehicle manufacturing.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Heavy-Duty Equipment Mechanics (7312)*
- *Motor Vehicle Assemblers, Inspectors and Testers (9482)*
- *Motor Vehicle Body Repairers (7322)*
- *Recreation vehicle service technicians (in 7383 Other Trades and Related Occupations)*
- *Supervisors, Motor Vehicle Assembling (9221)*
- *Supervisors of motor vehicle mechanics (in 7216 Contractors and Supervisors, Mechanic Trades)*
- *Transport truck and trailer assemblers and supervisors (in 9486 Mechanical Assemblers and Inspectors)*

7322 Motor Vehicle Body Repairers

Motor vehicle body repairers repair and restore damaged motor vehicle body parts and interior finishing; repaint body surfaces; and repair and/or replace automotive glass. They are employed by automobile dealerships, automobile body repair shops and automobile appraisal centres. This unit group also includes metal repairers who repair defective automobile body parts and damage to the bodies of newly assembled cars. They are employed by motor vehicle manufacturers.

Example titles

autobody repairer
automotive body mechanic
automotive glass technician
automotive painter apprentice
automotive painter – motor vehicle repair

metal finisher – motor vehicle manufacturing
metal repairer – motor vehicle manufacturing
motor vehicle body repairer apprentice
motor vehicle body technician – truck
painter – motor vehicle repair

Main duties

Workers in this unit group perform some or all of the following duties:

- Review damage report and estimates of repair cost and plan work to be performed
- Repair and replace front end components, body components, doors and frame and underbody components
- Hammer out dents, buckles and other defects using blocks and hammers
- Operate soldering equipment or use plastic filler to fill holes, dents and seams
- Remove damaged fenders, panels and grills using wrenches and cutting torch and bolt or weld replacement parts into place
- Straighten bent frames using frame and underbody pulling and anchoring equipment
- File, grind and sand repaired body surfaces using hand and power tools
- Mask and tape auto body surfaces in preparation for painting
- Mix paint, blend and match colors
- Apply primers and repaint surfaces using brush or spray guns
- Repair and replace glass components such as windshields, windows and sunroofs
- Repair or replace interior components, such as seat frame assembly, carpets and floorboard insulation
- Inspect repaired vehicles and test drive vehicles for proper handling.

Employment requirements

Motor vehicle body repairers

- Completion of secondary school is usually required.
- Completion of a three- to four-year motor vehicle body repair apprenticeship program
 - orA combination of over three years of work experience in the motor vehicle body repair trade and completion of a high school or college automotive body repair program is usually required to be eligible for trade certification.
- Trade certification for motor vehicle body repair (metal and paint) is compulsory in Quebec, Ontario, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories.
- Interprovincial trade certification (Red Seal) is available to qualified motor vehicle body repairers (metal and paint).

Automotive painters

- Completion of secondary school is usually required.
- Completion of a two- to three-year automotive painter apprenticeship program
 - orA combination of one year of work experience in the automotive painter trade and completion of a high school or college automotive painting program is usually required for automotive painter trade certification.

7322 Motor Vehicle Body Repairers

- Trade certification is compulsory in Alberta and British Columbia and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Nunavut and the Northwest Territories.
 - Interprovincial trade certification (Red Seal) is also available to qualified automotive painters.
- Automotive glass installers and repairers
- Completion of secondary school is usually required.
 - Auto glass industry certification is usually required.
 - Apprenticeship training for automotive glass technicians is available in British Columbia.
- Metal repairers, motor vehicle manufacturing
- Completion of secondary school is usually required.
 - One to two years of on-the-job training are provided.

Additional information

- With experience, motor vehicle body repair and automotive painter tradespersons may progress to supervisory positions.
- Metal repairers employed in motor vehicle manufacturing may progress to motor vehicle repairer positions through an apprenticeship program, or, with experience, they may progress to supervisory positions in motor vehicle manufacturing.
- Red Seal trade certification allows for interprovincial mobility of motor vehicle body repair and automotive painter tradespersons.

Classified elsewhere

- *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers* (7321)
- Painters – motor vehicle manufacturing (in 9496 *Painters and Coaters – Industrial*)
- *Supervisors, Motor Vehicle Assembling* (9221)
- Supervisors of motor vehicle body repairers and automotive painters (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7331 Oil and Solid Fuel Heating Mechanics

Oil and solid fuel heating mechanics install and maintain oil, coal and wood heating systems in residential and commercial buildings. They are employed by heating systems installation and service companies.

Example titles

heating system mechanic
heating technician
oil burner apprentice
oil burner installer

oil burner mechanic
oil burner mechanic apprentice
oil burner mechanic, residential
wood burner installer

Main duties

Oil and solid fuel heating mechanics perform some or all of the following duties:

- Read and interpret drawings or specifications to determine work to be performed
- Lay out oil burner heating system components and assemble components using hand and power tools
- Install oil burner components such as thermostats, motors, piping and safety devices, and connect to fuel supply, ventilation and electrical system
- Test installed unit and adjust controls for proper functioning
- Troubleshoot and repair malfunctioning oil burners, and their components and controls
- Install, maintain and repair coal and wood heating systems
- Perform scheduled maintenance service on oil and solid fuel heating systems.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program
 - or*
 - A combination of over four years of work experience in the trade and some college or industry courses in heating systems installation and repair is usually required for trade certification.
- Trade certification is compulsory in Nova Scotia and Quebec and is available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, New Brunswick, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is also available to qualified oil burner mechanics.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Refrigeration and Air Conditioning Mechanics* (7313)
- Servicers of natural gas furnaces (in 7253 *Gas Fitters*)
- Supervisors of oil and solid fuel heating mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7332 Electric Appliance Servicers and Repairers

Electric appliance servicers and repairers service and repair domestic electrical appliances. They are employed by repair shops, appliance service companies and repair departments of retail and wholesale establishments.

Example titles

appliance repairer apprentice

appliance servicer

appliance service technician

appliance service technician apprentice

dishwasher repairer

refrigerator repairer

service technician – electrical appliances

stove repairer

vacuum cleaner repairer

washing machine servicer

Main duties

Small appliance servicers and repairers perform some or all of the following duties:

- Repair small appliances, such as electrical lawn and garden equipment and power tools
- Consult customer or refer to work order to establish nature of the appliance malfunction
- Observe operation of appliance and conduct voltage, resistance and other tests using electrical test equipment
- Refer to schematic drawings or product manuals and replace or repair parts or components using hand tools and soldering equipment
- Prepare estimates and written accounts of work performed.

Major appliance repairers/technicians perform some or all of the following duties:

- Repair major appliances, such as domestic refrigerators and window air conditioners, in customer's home during service calls or in repair shop
- Consult customer or refer to work order to establish nature of the appliance malfunction
- Diagnose faults by checking controls, condensers, timer sequences, fans and other components using test equipment such as meters and gauges to measure resistance, current, voltage and pressure
- Refer to schematic diagrams or product manuals and disassemble appliance using hand tools
- Replace components and subcomponents and reassemble appliance using hand tools and soldering and brazing equipment
- Prepare estimates and written accounts of work performed
- Plan service routes.

Employment requirements

- Small appliance repairers usually require some specialized college or high school courses or several months of on-the-job training.
- Major appliance service/repair technicians require some secondary school education and completion of a college program in appliance repair
 - or
 - Completion of a three- or four-year apprenticeship program in appliance repair.
- Appliance service technician trade certification is compulsory in Alberta and available, but voluntary, in Newfoundland and Labrador, Nova Scotia New Brunswick, Prince Edward Island, British Columbia, Nunavut and the Northwest Territories.
- Interprovincial trade certification (Red Seal) is available to qualified appliance service technicians.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Electronic Service Technicians (Household and Business Equipment) (2242)*
- Supervisors of electrical appliance servicers and repairers (in *7216 Contractors and Supervisors, Mechanic Trades*)

7335 Other Small Engine and Equipment Mechanics

Mechanics in this unit group test, repair and service small gasoline and diesel-powered equipment, such as garden tractors, outboard motors, lawn mowers and other related equipment. They are employed by dealer service shops and by independent service establishments.

Example titles

air-cooled engine mechanic
lawn and garden equipment technician
lawn mower repairer, gasoline powered
motor boat mechanic

outboard motor mechanic
small engine technician
small equipment mechanic apprentice
small equipment repairer

Main duties

Mechanics in this unit group perform some or all of the following duties:

- Review work orders and discuss work to be performed with supervisor
- Inspect and test engine, motors and other mechanical components using test devices to diagnose and isolate faults
- Adjust, repair or replace mechanical or electrical system parts and components using hand tools and equipment
- Test and adjust repaired equipment for proper performance
- Perform scheduled maintenance service on equipment
- Advise customers on work performed and general condition of equipment
- Determine estimates of repair cost.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a three- to four-year apprenticeship program in small engine or equipment repair
 - or*
 - A combination of several years of work experience in the trade and some high school or college courses in small engine or equipment repair are usually required for trade certification.
- Small engine or equipment mechanic trade certification is available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, New Brunswick, Ontario, Alberta, British Columbia, Nunavut and the Northwest Territories.
- Inboard/outboard mechanic trade certification is available, but voluntary, in Ontario and British Columbia.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Motorcycle and Other Related Mechanics* (7334)
- Supervisors of small engine and equipment mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7341 Upholsterers

Upholsterers cover furniture, fixtures and similar items with fabric, leather or other upholstery materials. They are employed by furniture, aircraft, motor vehicle and other manufacturing companies, furniture retail outlets and repair shops or they may be self-employed.

Example titles

aircraft interior technician
automobile upholsterer
custom upholsterer

furniture upholsterer
upholsterer
upholstery repairer

Main duties

Upholsterers perform some or all of the following duties:

- Discuss upholstery fabric, colour, and style with customers and provide cost estimate for upholstering furniture or other items
- Lay out, measure and cut upholstery materials according to sketches or design specifications
- Replace worn-out webbing, springs and other furniture parts using hand and power tools
- Operate sewing machines or sew upholstery materials by hand to seam cushions and join sections of covering materials
- Install padding and underlays and fasten covering materials to furniture frames
- Tack, glue or sew ornamental trim, braids or buttons on upholstered items
- Lay out, cut, fabricate and install upholstery in aircrafts, motor vehicles, railway cars, boats and ships
- May repair furniture frames and refinish wood surfaces
- May make upholstery patterns from sketches, customer descriptions or blueprints
- May install, fabricate, maintain and repair interior components of aircraft, such as seats, coverings, drapes, cargo nets, flooring, closets, bins and panels.

Employment requirements

- Completion of secondary school is usually required.
- Completion of college or other specialized courses or an apprenticeship program in furniture upholstering and repair
or

Several years of on-the-job training, including working as an upholsterer helper are usually required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Furniture and Fixture Assemblers and Inspectors* (9492)
- *Furniture Finishers and Refinishers* (9494)
- Supervisors of upholsterers in furniture manufacturing (in 9224 *Supervisors, Furniture and Fixtures Manufacturing*)
- Upholsterer helpers (in 9619 *Other Labourers in Processing, Manufacturing and Utilities*)

7333 Electrical Mechanics

Electrical mechanics maintain, test, rebuild and repair electric motors, transformers, switchgear and other electrical apparatus. They are employed by independent electrical repair shops, service shops of electrical equipment manufacturers and maintenance departments of manufacturing companies.

Example titles

armature winder repairer
coil winder and repairer
electrical mechanic
electrical mechanic apprentice
electrical rewind mechanic

electrical transformer repairer
electric motor systems technician
industrial motor winder-repairer
power transformer repairer
transformer repairer

Main duties

Electrical mechanics perform some or all of the following duties:

- Test and observe electrical, electronic and mechanical components and systems using testing and measuring instruments
- Troubleshoot and repair electric motors, transformers, switchgear, generators and other electro-mechanical equipment
- Replace or recondition shafts, bearings, commutators and other components
- Wind, assemble and install various types of coils for electric motors or transformer
- Perform static or dynamic balancing of armatures or rotors by welding, brazing or soldering electrical connections and by aligning and adjusting parts
- Test and repair or replace faulty wiring or components in electrical switchgear
- Test repaired motors, transformers, switchgear or other electrical apparatus to ensure proper performance
- Perform some machining to recondition or modify shafts, commutators or other parts
- Perform on-site servicing and repair.

Electrical mechanics may specialize in working with certain types of apparatus, such as electric motors or transformers, or in performing certain functions, such as winding coils.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a four-year apprenticeship program
or
A combination of over four years of work experience in the trade and some college or industry courses in electrical mechanics is usually required for trade certification.
- Trade certification as an electrical rewind mechanic is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Manitoba, Alberta, British Columbia, Nunavut, the Northwest Territories and the Yukon.
- Interprovincial trade certification (Red Seal) is available to qualified electric motor system technicians.

Additional information

- Although specialization may occur, workers in this unit group are expected to be proficient in repairing all electrical apparatus.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- Aircraft electrical mechanics (in 2244 *Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors*)
- Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers (9485)
- Industrial Electricians (7242)
- Supervisors of electrical mechanics (in 7216 *Contractors and Supervisors, Mechanic Trades*)

7334 Motorcycle and Other Related Mechanics

Mechanics in this unit group test, repair and service motorcycles, motor scooters, snowmobiles, forklifts and all-terrain vehicles. They are employed by service shops of motorcycle dealers and retailers and by independent service establishments.

Example titles

all-terrain vehicle repainer
forklift mechanic
industrial truck repainer
motorcycle mechanic

motorcycle mechanic apprentice
motor scooter repainer
snowmobile repainer

Main duties

Mechanics in this unit group perform some or all of the following duties:

- Review work orders and discuss work to be performed with supervisor
- Inspect and test engine and other mechanical components using test devices to diagnose and isolate faults
- Adjust, repair or replace mechanical or electrical system parts and components using hand tools and equipment
- Test and adjust repaired systems for proper performance
- Perform scheduled maintenance service on equipment
- Advise customers on work performed and general condition of equipment
- Determine estimates of repair cost
- May repair and rebuild hoisting mechanism and other mechanical systems on industrial trucks and forklifts.

- Interprovincial trade certification (Red Seal) is also available for qualified motorcycle mechanics.

Additional information

- There is mobility between some occupations in this unit group.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification allows for interprovincial mobility.

Classified elsewhere

- *Other Small Engine and Equipment Mechanics (7335)*
- Supervisors of motorcycle and related equipment mechanics (in *7216 Contractors and Supervisors, Mechanic Trades*)

Employment requirements

- Completion of secondary school is usually required.
- For motorcycle mechanics, completion of a three- to four-year apprenticeship program
 - or
 - A combination of over three years of work experience in the trade and some high school or college courses in motorcycle repair is usually required to be eligible for trade certification.
- Motorcycle mechanic trade certification is compulsory in Ontario and Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick and British Columbia.
- Other mechanics in this unit group may require several years of on-the-job training.

7342 Tailors, Dressmakers, Furriers and Milliners

Tailors, dressmakers and furriers make, alter and repair tailored clothing, dresses, coats and other made-to-measure garments. Milliners make, alter and repair hats. This unit group also includes alterationists who fit, alter and repair garments. They are employed by clothing retailers, clothing alteration shops, dry cleaners and garment manufacturing companies or they may be self-employed.

Example titles

alterationist, garments
custom furrier
custom tailor
dressmaker

furrier
milliner
seamstress
tailor

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Tailors make made-to-measure garments, such as suits and coats according to customers' and clothing manufacturers' specifications and fit; design patterns to fit measurements; mark, cut and sew fabric; and may alter and repair garments as required.
- Dressmakers make women's garments; select and modify commercial patterns to customers' and clothing manufacturers' specifications and fit, mark, cut and sew fabric; and may alter and repair garments as required.
- Furriers make, alter, restyle and repair natural fur garments and accessories.
- Milliners design, lay out, cut, sew and press fabric, leather and other materials into hats and related accessories.
- Alterationists fit, alter and repair garments according to customers' requests by hand or using sewing machines.

Employment requirements

- Completion of secondary school may be required.
- Tailors and dressmakers require demonstrated ability to sew, style and fit men's or women's garments and may require completion of college or other courses in tailoring or dressmaking.
- Furriers require several years of experience in selecting pelts and making, fitting, styling and altering fur garments and accessories.
- Milliners require demonstrated ability to sew, style and fit hats and caps.
- Alterationists require demonstrated ability to sew, alter and repair garments.

Classified elsewhere

- Couturier – haute couture (in 5243 *Theatre, Fashion, Exhibit and Other Creative Designers*)
- *Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing* (945)

7343 Shoe Repairers and Shoemakers

Shoe repairers repair footwear and shoemakers make specialized and custom shoes and boots. They are employed in shoe repair shops or custom shoemaking establishments, or they may be self-employed.

Example titles

bootmaker
custom shoemaker
orthopedic shoemaker

shoemaker
shoe repairer

Main duties

Shoemakers perform some or all of the following duties:

- Discuss type of footwear to be made and obtain measurements from customer
- Select patterns and leather or other material and outline and cut patterns
- Select or assemble lasts, fasten insoles to lasts and sew or glue other parts into place
- Trim, dress and otherwise finish boots or shoes
- Estimate custom footwear costs and receive payment from customers
- May supervise other shoemakers and shoe repairers.

Shoe repairers perform some or all of the following duties:

- Repair soles, heels and other parts of footwear using sewing, buffing and other shoe repair machines, materials and equipment
- Repair belts, luggage, purses and similar products
- Estimate footwear repair costs and take payment.

Employment requirements

- Some secondary school may be required.
- Several months of on-the-job training is provided for shoe repairers.
- Extensive on-the-job training is provided for shoemakers.
- Shoemakers may require experience as shoe repairers.

Additional information

- Shoe repairers may progress to shoemakers with experience.

Classified elsewhere

- Labourers in shoe manufacturing (in 9619 *Other Labourers in Processing, Manufacturing and Utilities*)
- Workers who cut fabric or leather to form shoe parts on a production basis (in 9452 *Fabric, Fur and Leather Cutters*)
- Workers who operate sewing machines to make shoes on a production basis (in 9451 *Sewing Machine Operators*)

7344 Jewellers, Watch Repairers and Related Occupations

Jewellers and related workers in this unit group fabricate, assemble, repair and appraise fine jewellery. Watch repairers and related workers in this unit group repair, clean, adjust and fabricate parts for clocks and watches. They are employed by jewellery, clock and watch manufacturers and retail stores, by jewellery and watch repair shops or they may be self-employed.

Example titles

clock repairer
diamond cutter
gem cutter
gemologist

pearl cutter
precious stone setter
watchmaker
watch repairer

Main duties

Jewellers and related workers perform some or all of the following duties:

- Fabricate and repair precious and semi-precious metal jewellery, such as rings, brooches, pendants, bracelets and lockets
- Examine, cut, shape and polish diamonds using optical instruments, lathes and laps
- Examine, cut, shape and polish precious and synthetic gems using optical instruments, cutting disks and laps
- Appraise gemstones and diamonds to differentiate between stones, identify rare specimens and to detect peculiarity affecting stone values
- Set precious and semi-precious stones in jewellery mountings, according to specifications
- May supervise other jewellers.

Jewellers may specialize in certain kinds of jewellery, such as gold or silver, or in particular operations, such as fabrication or repair.

Watch repairers perform some or all of the following duties:

- Fabricate or fit parts to make watches and clocks
- Examine clocks and watches, disassemble and check for defective and misaligned parts or rust
- Replace or repair worn or broken parts
- Test, adjust and regulate timepiece movements
- Clean all parts using special cleaning and rinsing solutions and ultrasonic or mechanical cleaning machines to remove dirt and dried lubricants
- May supervise other watch repairers.

Employment requirements

- Completion of secondary school is usually required.

- Completion of a college or other program, or apprenticeship training in watch or jewellery repair or gemology is usually required.
- A watch repairer certificate is compulsory in Quebec and Ontario.
- Experience as a jewellery, clock or watch assembler may be required.

Additional information

- Mobility is possible among the various jewellery occupations in this unit group.
- There is little mobility between the jewellery occupations and the watch repairers in this unit group.

Classified elsewhere

- Jewellery and clock and watch production assemblers (in 9498 *Other Assemblers and Inspectors*)
- Silversmiths and jewellery artisans (in 5244 *Artisans and Craftspersons*)

7351 Stationary Engineers and Auxiliary Equipment Operators

Stationary engineers and auxiliary equipment operators operate and maintain various types of stationary engines and auxiliary equipment to provide heat, light, power and other utility services for commercial, industrial and institutional buildings and other work sites. They are employed in industrial and manufacturing plants, hospitals, universities, government, utilities, hotels and other commercial establishments.

Example titles

auxiliary plant operator
boiler operator
power engineer
power engineer apprentice

stationary engineer
stationary engineer apprentice
steam plant operator

Main duties

Stationary engineers and auxiliary equipment operators perform some or all of the following duties:

- Operate automated or computerized control systems, stationary engines and auxiliary equipment such as boilers, turbines, generators, pumps, compressors, pollution control devices and other equipment to provide heat, ventilation, refrigeration, light and power for buildings, industrial plants and other work sites
- Monitor and inspect plant equipment, computer terminals, switches, valves, gauges, alarms, meters and other instruments to measure temperature, pressure and fuel flow, to detect leaks or other equipment malfunctions and to ensure plant equipment is operating at maximum efficiency
- Analyze and record instrument readings and equipment malfunctions
- Troubleshoot and perform corrective action and minor repairs to prevent equipment or system failure
- Clean and lubricate generators, turbines, pumps and compressors and perform other routine equipment maintenance duties using appropriate lubricants and hand, power and precision tools
- Maintain a daily log of operation, maintenance and safety activities, and write reports about plant operation
- May assist in the development of operation, maintenance and safety procedures.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a regulated apprenticeship program in stationary or power engineering or
 - On-the-job training and additional courses or a college training program in stationary or power engineering or building systems operations are required.
- Provincial or territorial certification or licensing according to class (4th, 3rd, 2nd and 1st class and an additional 5th class in Manitoba, Saskatchewan, Nunavut and the Northwest Territories) is required.
- Certification according to class (4th, 3rd, 2nd or 1st class for heating and steam engines and class B or A for refrigeration) is required in Quebec.

Additional information

- Progression from lower to higher classes for stationary or power engineers is dependent on further training and experience.

Classified elsewhere

- *Power Systems and Power Station Operators (7352)*
- Professional engineers (in 213 Civil, Mechanical, Electrical and Chemical Engineers and 214 Other Engineers)
- Supervisors of stationary engineers and auxiliary equipment operators (in 9212 Supervisors, Petroleum, Gas and Chemical Processing and Utilities)

7352 Power Systems and Power Station Operators

Power systems operators monitor and operate switchboards and related equipment in electrical control centres to control the distribution of electrical power in transmission networks. Power station operators operate reactors, turbines, boilers, generators and other related equipment in electrical generating stations and substations. They are employed by electric power utilities and by some large manufacturing facilities.

Example titles

apprentice power dispatcher
chief operator, area dispatch
diesel station operator
distribution control operator
generating station operator

nuclear reactor operator
power dispatcher
power plant operator
power system operator

Main duties

Power systems operators perform some or all of the following duties:

- Monitor and operate computerized switchboards and auxiliary equipment in electrical control centres to control the distribution and to regulate the flow of electrical power in the transmission network
- Co-ordinate, schedule and direct generating station and substation power loads and line voltages to meet distribution demands during daily operations, system outages, repairs and importing or exporting of power
- Monitor and visually inspect station instruments, meters and alarms to ensure transmission voltages and line loadings are within prescribed limits and to detect equipment failure, line disturbances and outages
- Issue work and test permits to electrical and mechanical maintenance personnel, and assist maintenance and technical personnel to locate and isolate system problems and assist during routine system testing
- Complete and maintain station records, logs and reports.

Power station operators perform some or all of the following duties:

- Operate reactors, turbines, boilers, generators, condensers and auxiliary equipment in hydro, thermal and nuclear power plants to generate electrical power
- Start up and shut down power plant equipment, control switching operations, regulate water levels and communicate with systems operators to regulate and co-ordinate transmission loads, frequency and line voltages

- Monitor and visually inspect power plant equipment and equipment indicators to detect operating problems and make adjustments or minor repairs as required
- Complete and maintain station records, logs and reports.

Employment requirements

- Completion of secondary school is required for power systems and power station operators.
- Power systems operators require completion of a three- to five-year power system operator apprenticeship program
 - or
 - Over three years of work experience in the trade and some college or industry courses in electrical and electronic technology.
- Trade certification is available, but voluntary for power system operators in Newfoundland and Labrador and New Brunswick.
- Power station operators require an apprenticeship program in stationary or power engineering
 - or
 - Several years of work experience in the trade and some high school, correspondence or college courses in stationary or power engineering.
- Power station operators require a provincial or territorial power engineering or stationary engineering certificate according to class.
- Control room operators at nuclear power plants require licensing from the Canadian Nuclear Safety Commission.

Additional information

- Progression to supervisory positions is possible with experience.

7352 Power Systems and Power Station Operators

Classified elsewhere

- *Stationary Engineers and Auxiliary Equipment Operators (7351)*
- Supervisors of power system and power station operators (in 9212 *Supervisors, Petroleum, Gas and Chemical Processing and Utilities*)

7361 Railway and Yard Locomotive Engineers

Railway locomotive engineers operate railway locomotives to transport passengers and freight. They are employed by railway transport companies. Yard locomotive engineers operate locomotives within yards of railway, industrial or other establishments. They are employed by railway transport companies and industrial or commercial users of rail transport.

Example titles

locomotive engineer – railway

railway engineer

railway hostler

switch engineer

yard engineer – railway

Main duties

Railway locomotive engineers perform some or all of the following duties:

- Operate locomotives to transport passengers and freight on railways
- Operate communication systems to communicate with train crews and traffic controllers to ensure safe operation and scheduling of trains
- Inspect assigned locomotives and test operating controls and equipment.

Yard locomotive engineers perform some or all of the following duties:

- Operate locomotives to switch, couple and uncouple cars for loading and unloading
- Perform switching operations according to written switching orders or dispatched instructions
- Inspect locomotives, replenish fuel or perform routine maintenance on locomotives.

Employment requirements

- Completion of secondary school is usually required.
- Experience as a conductor is required for railway locomotive engineers and may be required for yard locomotive engineers.
- Experience as a railway yard worker may be required for yard locomotive engineers.
- Railway locomotive engineers require a "Canadian Rail Operating Rules" certificate.

Additional information

- Mobility between railway transport companies or between establishments employing locomotive engineers may be limited due to seniority provisions of collective agreements.

Classified elsewhere

- Subway and light rail transit operators (in 7412 *Bus Drivers, Subway Operators and Other Transit Operators*)
- *Supervisors, Railway Transport Operations* (7221)
- Train dispatchers (in 2275 *Railway Traffic Controllers and Marine Traffic Regulators*)

7362 Railway Conductors and Brakemen/women

Railway conductors co-ordinate and supervise the activities of passenger and freight train crew members. Brakemen check train brakes and other systems and equipment prior to train run, and assist railway conductors in activities en route. They are employed by railway transport companies.

Example titles

brakeman/woman
freight train conductor
front-end brakeman/woman
passenger train conductor

railway conductor
road freight brakeman/woman
tail-end brakeman/woman
train conductor

Main duties

Railway conductors perform some or all of the following duties:

- Supervise and co-ordinate the activities of passenger and freight train crew members (except locomotive engineers) to ensure train operations are in accordance with schedule, train orders and code of operating rules
- Receive train orders and explain orders to brakemen/women, locomotive engineer and other crew members
- Communicate with train crew members by radio, signals or by other means to give and receive train operation information
- Collect fares on board passenger trains, announce approaching train stops and answer passenger enquiries
- Prepare train run reports.

Brakemen/women perform some or all of the following duties:

- Check train systems and equipment such as air conditioning and heating systems, brakes and brake hoses prior to train run
- Communicate with train crew members by radio, signals or by other means to aid in the movement and operation of train
- Receive orders from traffic controllers, observe signals and track conditions and open and close track switches
- Set and release hand brakes and connect air brake hoses to couple and switch passenger or freight cars, making minor repairs to couplings, air hoses and wheel-bearing boxes as required
- Assist in collecting fares and helping passengers on and off train.

- Experience as a brakeman/woman is required for conductors.

- Experience as a railway worker is usually required for brakemen/women.
- Railway conductors require a Canadian Rail Operating Rules certificate.
- Brakemen/women require a Canadian Rail Operating Rules certificate.

Additional information

- With experience, brakemen/women may progress to railway conductors.
- With experience, railway conductors may progress to locomotive engineers.

Classified elsewhere

- *Railway and Yard Locomotive Engineers* (7361)
- *Supervisors, Railway Transport Operations* (7221)

Employment requirements

- Completion of secondary school is usually required.

7371 Crane Operators

Classified elsewhere

- *Heavy Equipment Operators (Except Crane)*
(7421)
- Hoist operators – underground mining (in 8231
*Underground Production and Development
Miners*)
- Supervisors of crane operators (in 7217
*Contractors and Supervisors, Heavy
Construction Equipment Crews*)

7371 Crane Operators

Crane operators operate cranes or draglines to lift, move, position or place machinery, equipment and other large objects at construction or industrial sites, ports, railway yards, surface mines and other similar locations. They are employed by construction, industrial, mining, cargo handling and railway companies.

Example titles

boom truck crane operator
bridge crane operator
climbing crane operator
construction crane operator
crane operator
dragline crane operator

gantry crane operator
hoist operator (except underground mining)
mobile crane operator
tower crane operator
tractor crane operator

Main duties

Crane operators perform some or all of the following duties:

- Operate mobile and tower cranes to lift, move, position or place equipment and materials
- Perform pre-operational inspection, and calculate crane capacities and weight to prepare for rigging and hoisting
- Operate pile driving cranes to drive pilings into earth to provide support for buildings and other structures
- Operate cranes equipped with dredging attachments to dredge waterways and other areas
- Operate gantry cranes to load and unload ship cargo at port side
- Operate locomotive cranes to move objects and materials at railway yards
- Operate bridge or overhead cranes to lift, move and place plant machinery and materials
- Operate offshore oil rig cranes to unload and reload supply vessels
- Operate cranes mounted on boats or barges to lift, move and place equipment and materials
- Operate dragline cranes to expose coal seams and ore deposits at open pit mines
- May assemble tower cranes on site
- Perform routine maintenance work such as cleaning and lubricating cranes.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a one- to three-year apprenticeship program
or
High school, college or industry courses in crane operating are usually required.

- Trade certification as a hoist operator is compulsory in Quebec and available, but voluntary, in Saskatchewan.
- Boom truck crane operator trade certification is compulsory in Manitoba and Alberta and available, but voluntary, in Saskatchewan, British Columbia, Nunavut and the Northwest Territories.
- Mobile crane operator (8-15 tons) trade certification is compulsory in Ontario and available, but voluntary, in New Brunswick.
- Tower crane operator trade certification is compulsory in Ontario, Manitoba and Alberta, and is available, but voluntary, in Newfoundland and Labrador, Saskatchewan and British Columbia.
- Trade certification as a hoist operator (hydraulic crane) is available, but voluntary, in Saskatchewan and British Columbia.
- Mobile crane operator trade certification is compulsory in Quebec, Ontario, Manitoba and Alberta and available, but voluntary, in all other provinces, Nunavut and the Northwest Territories.
- Mobile crane operators may require a provincial licence to drive mobile cranes on public roads.
- Internal company certification as a crane operator may be required by some employers.
- Interprovincial trade certification (Red Seal) is also available to mobile crane operators.

Additional information

- Progression to supervisory positions is possible with experience.
- Red Seal trade certification for mobile crane operators allows for interprovincial mobility.

7372 Drillers and Blasters – Surface Mining, Quarrying and Construction

Drillers in this unit group operate mobile drilling machines to bore blast holes in open-pit mines and quarries and to bore holes for blasting and for building foundations at construction sites. Blasters in this unit group fill blast holes with explosives and detonate explosives to dislodge coal, ore and rock or to demolish structures. They are employed by mining, quarrying and construction companies and by drilling and blasting contractors.

Example titles

blaster, construction
blaster – surface mining
driller, construction
foundation drill operator

open-pit blaster
open-pit driller
rotary drilling machine operator

Main duties

Drillers in this unit group perform some or all of the following duties:

- Drive and operate tracked or truck-mounted rotary drilling, air-track or other drilling machines to bore large blast holes to specified depths at staked positions in open-pit mine or quarry
- Operate drilling machines to drill blast holes in rock at road or other construction sites
- Operate tracked or truck-mounted drill equipped with auger or other attachment to drill holes for building foundations or pilings
- May measure location and stake out pattern of holes to be drilled, load blast holes with explosives and detonate explosives to dislodge coal, ore or rock.

Blasters in this unit group perform some or all of the following duties:

- Read instructions or diagrams, lay out drill pattern and determine depth and diameter of blast holes and conduct field tests to determine type and quantity of explosives required
- Assemble or direct other workers to assemble primer charges using selected detonators, fuses, detonating cords and other materials
- Load explosives in blast holes by hand or direct movement of bulk explosives trucks to load holes
- Connect electrical wires, detonating cords or fuses into series and connect series to blasting machines; press handle or button to detonate charges
- Handle, store and transport explosives and accessories in accordance with regulations and ensure that safety procedures are observed

- May operate air-track, rotary, down-the-hole or other drilling machines to drill blast holes or may direct drilling of blast holes.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training is provided.
- Experience as a heavy equipment operator may be required for drillers.
- Experience as a blaster helper in surface mining and quarrying or construction may be required for blasters.
- Provincial blasting licence is usually required for blasters.
- Trade certification for blasters is available, but voluntary, in New Brunswick.

Additional information

- Drillers and blasters often perform both drilling and blasting activities.
- Progression to supervisory positions is possible with experience.

7372 Drillers and Blasters – Surface Mining, Quarrying and Construction

Classified elsewhere

- Oil and gas well drillers (in 8232 *Oil and Gas Well Drillers, Servicers, Testers and Related Workers*)
- Supervisors of construction drillers and blasters (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)
- Supervisors of surface mining drillers and blasters (in 8221 *Supervisors, Mining and Quarrying*)
- Underground mine drillers and blasters (in 8231 *Underground Production and Development Miners*)
- *Water Well Drillers* (7373)

7373 Water Well Drillers

Water well drillers operate a variety of mobile water well drilling rigs and equipment to drill and monitor residential, commercial and industrial water wells. They are employed by water well drilling contractors and governments, or they may be self-employed.

Example titles

cable tool driller – water well drilling
churn drill operator – water well drilling

water well driller
water well driller apprentice

Main duties

Water well drillers perform some or all of the following duties:

- Review client requirements and proposed locations for water wells
- Operate water well drilling rigs and other equipment to drill, bore and dig for residential, commercial and industrial water wells or environmental assessment, and install well screens, casings and other well fixtures
- Document geological formations encountered
- Clean and disinfect wells in preparation for use
- Perform routine mechanical maintenance work on water well drilling rigs and equipment
- Install, test, maintain and repair water well pumps, piping systems and equipment and perform pumping tests to assess well performance
- May provide other drilling services, such as repair or dismantling of existing water well structure, elevator shaft drilling and hydro pole drilling.

Water well drillers may specialize in a specific method of drilling, such as cable, rotary, auger, hammer or reverse circulation drilling.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to three-year water well drilling apprenticeship program
 - or
 - Two to three years of work experience in the trade combined with college or industry courses in water well drilling is usually required to be eligible for trade certification.
- Trade certification is available, but voluntary, in New Brunswick, Saskatchewan, Alberta and British Columbia.

Additional information

- Mobility is possible among the various well drilling operators in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Drillers – underground mining (in 8231 *Underground Production and Development Miners*)
- *Oil and Gas Well Drillers, Servicers, Testers and Related Workers* (8232)
- Surface mining, quarrying and construction drillers (in 7372 *Drillers and Blasters – Surface Mining, Quarrying and Construction*)
- Water well drilling contractors and supervisors of water well drillers (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)

7381 Printing Press Operators

Printing press operators set up and operate sheet and web-fed presses to print illustrations, designs and text on paper, plastic, sheet metal and other material. They are employed by commercial printing companies; newspapers, magazines, and other publishing companies; and establishments in the public and private sectors that have in-house printing departments.

Example titles

apprentice pressman/woman
assistant pressman/woman
first pressman/woman
flexographic press operator

offset press operator
printing press operator
rotogravure pressman/woman – printing

Main duties

Printing press operators perform some or all of the following duties:

- Review job orders to determine job specifications such as production time, colour sequence and quantities required, and advise press crew of these specifications
- Mount plates or cylinders and make necessary adjustments
- Fill ink fountains and take measurements, make adjustments and determine settings to control colour and viscosity
- Set up press and check samples for ink coverage, alignment and registration
- Monitor regular press run for quality consistency using computer control console and make adjustments if required
- Remove and clean plates and cylinders at end of press run
- Set up and adjust in-line binding and finishing equipment
- Direct activities of press crew and ensure that safety procedures are adhered to.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a college program in printing technology
 - or
 - A four-year apprenticeship program in printing
 - or
 - A combination of on-the-job training and specialized high school, college or industry courses is usually required.
- Trade certification is available, but voluntary, in Ontario, Alberta, Nunavut and the Northwest Territories.

Additional information

- Progression to supervisory positions, such as pressroom supervisor, is possible with experience.

Classified elsewhere

- Operators of laser printers, colour and large copiers and printing machines (in 9471 *Printing Machine Operators*)
- Screen printing artisans (in 5244 *Artisans and Craftspersons*)
- Supervisors, *Printing and Related Occupations* (7218)
- Textile printers (in 9443 *Textile Dyeing and Finishing Machine Operators*)

7382 Commercial Divers

Commercial divers perform underwater activities related to construction, inspection, search, salvage, repair and photography. They are employed by commercial diving contractors, shipping and marine construction companies, and oil and gas companies with offshore operations.

Example titles

commercial diver
diver
offshore diver
skin diver, commercial

underwater contractor
underwater welder
underwater worker

Main duties

Commercial divers perform some or all of the following duties:

- Perform offshore oil and gas exploration and extraction duties such as underwater surveys, nondestructive testing, blasting, construction, and repair and maintenance of drill rigs and platforms
- Operate underwater video, sonar, recording and related equipment for scientific or exploratory purposes
- Inspect vessels, buoyage systems, pipelines, sluice gates, plant intakes and outfalls and other materials, visually and by nondestructive testing
- Perform construction duties such as welding and installing pilings for cofferdams or footings for piers, and maintain these and drydocks, breakwaters, marine ways and bridge foundations using hand and power tools and pneumatic equipment
- Operate winches, derricks or cranes to manipulate cables and chains to raise sunken objects
- Set up and detonate explosives to remove obstructions and break up or refloat submerged objects
- Participate in underwater search and rescue, salvage, recovery and clean up operations
- Check and maintain diving equipment such as helmets, masks, air tanks, harnesses, gauges, air compressors, diving suits, underwater cutting torches and welding equipment
- May supervise and train other divers.

- A commercial diver must meet the requirements of CSA Standard Z275.4-02, *Competency Standard for Diving Operations*.
- An Occupational Diver Certificate of Competency issued by the Diver Certification Board of Canada (DCBC) or qualification earned through a formal education program, training courses in diving or a combination of education and practical experience is required.
- Certification of competency for divers is required.
- Military or police diving experience may be required.
- A provincial blaster's licence is usually required for the setting and detonation of explosives.
- A diving medical examination from an approved hyperbaric physician is required.

Classified elsewhere

- Police divers (in 6261 *Police Officers (Except Commissioned)*)
- *Welders and Related Machine Operators* (7265)

Employment requirements

- Completion of secondary school is usually required.

7383 Other Trades and Related Occupations

This unit group includes tradespersons and related skilled workers, not elsewhere classified, who repair, service, install, calibrate or fabricate a variety of products. They are employed by a wide range of establishments, or they may be self-employed.

Example titles

aircraft patternmaker

farrier

gunsmith

locksmith

recreation vehicle technician

safe and vault servicer

saw fitter

small arms repairer

template maker

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Gunsmiths fabricate guns and repair and modify firearms according to blueprints or customers' specifications.
- Locksmiths repair, install and adjust locks, make keys and change lock combinations.
- Recreation vehicle technicians repair or replace electrical wiring, plumbing, propane gas lines, appliances, windows, doors, cabinets and structural frames in recreational vehicles.
- Safe and vault servicers install, repair and maintain safes and vaults in banks and other establishments.
- Saw fitters repair, set and sharpen band saws, chain saws, circular saws and other types of saw blades according to specifications.

- Trade certification for recreation vehicle technicians is compulsory in Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, British Columbia and the Yukon.
- Trade certification for saw fitters is available, but voluntary, in Alberta, British Columbia and the Yukon.
- Provincial trade certification or licence may be required for other occupations in this unit group.
- Interprovincial trade certification (Red Seal) is also available to qualified recreation vehicle service technicians.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a two- to four-year apprenticeship program in a relevant trade, such as locksmith, recreation vehicle technician or saw fitter
 - or
 - College, high school or industry courses combined with several years of related work experience
 - or
 - Several years of on-the-job training are required.
- Trade certification for locksmiths is available, but voluntary, in Nova Scotia, Saskatchewan, Alberta, British Columbia, Nunavut and the Northwest Territories.

Additional information

- There is little or no mobility among occupations in this unit group.
- Progression to supervisory positions is possible with experience.
- Red Seal trade certification for recreation vehicle service technicians allows for interprovincial mobility.

Classified elsewhere

- *Automotive Service Technicians* (732)
- *Motorcycle and Other Related Mechanics* (7334)
- *Other Repairers and Servicers* (7445)
- *Other Small Engine and Equipment Mechanics* (7335)

7411 Truck Drivers

Truck drivers operate heavy trucks to transport goods and materials over urban, interurban, provincial and international routes. They are employed by transportation companies, manufacturing and distribution companies, moving companies and employment service agencies, or they may be self-employed. This unit group also includes shunters who move trailers to and from loading docks within trucking yards or lots.

Example titles

bulk goods truck driver
dump truck driver
flatbed truck driver
logging truck driver
long haul truck driver
moving van driver

shunt truck driver
tow truck driver
truck driver
truck driver, heavy truck
truck driver, tractor-trailer

Main duties

Long-haul truck drivers perform some or all of the following duties:

- Operate and drive straight or articulated trucks, weighing over 4600 kg with three or more axles, to transport goods and material to destinations
- Oversee all aspects of vehicles, such as condition of equipment, loading and unloading, and safety and security of cargo
- Perform pre-trip inspection of vehicle systems and equipment such as tires, lights, brakes and cold storage
- Perform emergency roadside repairs
- Obtain special permits and other documents required to transport cargo on international routes
- Record cargo information, distance travelled, fuel consumption and other information in log book or on on-board computer
- Communicate with dispatcher and other drivers using two-way radio, cellular telephone and on-board computer
- May drive as part of a two-person team or convoy
- May transport hazardous products or dangerous goods.

Line-haul and local truck drivers perform some or all of the following duties:

- Operate and drive straight trucks to transport goods and materials over urban and short inter-urban routes
- May drive lighter, special purpose trucks such as tow trucks, dump trucks, hydrovac trucks or cement mixing trucks

- Perform pre-trip inspection and oversee all aspects of vehicles such as condition of equipment, and loading and unloading of cargo.

Employment requirements

- Completion of secondary school is usually required.
- On-the-job training is provided.
- A Class D licence is required to drive straight trucks.
- A Class A licence is required to drive articulated trucks.
- Air brake endorsement (Z) is required for drivers who operate vehicles equipped with air brakes.
- Transportation of dangerous goods (TDG) certification is required for drivers who transport hazardous products or dangerous goods.

Additional information

- Progression to supervisory positions or to non-driving occupations, such as driver trainer, safety officer or truck dispatcher is possible with additional training or experience.

7411 Truck Drivers

Classified elsewhere

- Drivers of light trucks (in 7414 *Delivery and Courier Service Drivers*)
- Snowplough and garbage truck drivers (in 7422 *Public Works Maintenance Equipment Operators*)
- Supervisors, Motor Transport and Other Ground Transit Operators (7222)
- Truck dispatchers (in 1475 *Dispatchers and Radio Operators*)
- Truck driver helpers (in 7622 *Railway and Motor Transport Labourers*)
- Truck driver trainers (in 4131 *College and Other Vocational Instructors*)

7412 Bus Drivers, Subway Operators and Other Transit Operators

This unit group includes workers who drive buses and operate streetcars, subway trains and light rail transit vehicles to transport passengers on established routes. Bus drivers are employed by urban transit systems, elementary and secondary schools and private transportation companies. Streetcar, subway and light rail transit operators are employed by urban transit systems.

Example titles

bus driver	sightseeing tour driver
ground transportation driver	streetcar operator
light rail transit operator	subway train operator
motor coach driver	transit operator – transportation
school bus driver	

Main duties

Bus and streetcar drivers perform some or all of the following duties:

- Drive buses or streetcars to transport passengers along established routes to local destinations
- Drive buses to transport passengers and goods to intercity or long distance destinations
- Drive sightseeing tour buses to transport passengers locally or over long distances, and may provide information on points of interest during trip
- Drive buses equipped for wheelchair accessibility, and aid passengers in boarding
- Provide passengers with information on fares, schedules and stops
- Collect fares, issue transfers, check bus passes and record transactions
- Report delays, mechanical problems and accidents
- May load and unload passengers' luggage.

School bus drivers perform some or all of the following duties:

- Drive school buses to transport children between school and home or on excursions
- Ensure children's safety when boarding and leaving buses and crossing street while bus is stopped.

Subway train and light rail transit operators perform some or all of the following duties:

- Operate subway or rail transit vehicles as part of two-person crew
- Observe signals at crossings and arrival and departure points
- Operate controls to open and close transit vehicle doors

- Report delays, malfunctions and accidents to control unit
- Direct passengers during emergency evacuation procedures.

Employment requirements

- Completion of secondary school may be required.
- Up to three months of on-the-job training, including classroom instruction, is usually provided for all occupations in this unit group.
- A minimum of one year of safe driving experience is required.
- Bus drivers require a Class B, C, E or F driver's licence in Ontario, and a Class 2 driver's licence elsewhere.
- An air brakes endorsement and first aid certificate may be required.
- Experience as a public transit bus driver is usually required for subway and light rail transit operators.

Additional information

- Progression to transit supervisory or inspector positions is possible with experience.

Classified elsewhere

- Supervisors and inspectors of bus drivers, subway operators and other transit operators (in *7222 Supervisors, Motor Transport and Other Ground Transit Operators*)

7413 Taxi and Limousine Drivers and Chauffeurs

Taxi and limousine drivers drive automobiles and limousines to transport passengers. Chauffeurs drive automobiles and limousines to transport personnel and visitors of businesses, government or other organizations or members of private households. Taxi and limousine drivers are employed by taxi and other transportation service companies, or they may be self-employed. Chauffeurs are employed by businesses, government and other organizations, or private individuals or families.

Example titles

airport limousine driver
limousine driver

taxi driver

Main duties

Taxi and limousine drivers perform some or all of the following duties:

- Pick up passengers and drive them to destinations in taxicabs or limousines
- Assist passengers with luggage and in boarding vehicles
- Collect flat-rate or taximeter fares
- Record transactions
- Maintain contact with taxi dispatch unit.

Chauffeurs perform some or all of the following duties:

- Pick up or meet employer according to request, appointment or schedule
- Drive employer to destinations in automobile or limousine
- Perform business and personal errands for employer such as delivering and picking up mail, business documents and parcels
- Clean and make minor repairs to vehicle or take vehicle for servicing.

Employment requirements

- Some secondary school education is usually required.
- A minimum of one year of safe driving experience is usually required.
- A Class G driver's licence is required in Ontario, and a Class 4 driver's licence elsewhere.
- Taxi and limousine drivers require good knowledge of the geographical area to be covered.
- Taxi drivers usually require a municipal permit.

Additional information

- Mobility from taxi or limousine driver to chauffeur is possible with experience.

Classified elsewhere

- *Supervisors, Motor Transport and Other Ground Transit Operators (7222)*
- *Taxi dispatchers (in 1475 Dispatchers and Radio Operators)*

7414 Delivery and Courier Service Drivers

Delivery and courier drivers drive automobiles, vans and light trucks to pick up and deliver various products. They are employed by dairies, drug stores, newspaper distributors, take-out food establishments, dry cleaners, mobile caterers, courier and messenger service companies and many other establishments, or they may be self-employed.

Example titles

bread deliverer
canteen driver
courier service driver
delivery driver
driver salesperson
dry cleaning driver

mail service courier
newspaper delivery driver
pizza delivery driver
route driver
vending machine driver-supplier

Main duties

Delivery drivers perform some or all of the following duties:

- Operate and drive automobiles, vans and light trucks to pick up and deliver various products, such as fast food, newspapers, magazines, bakery and dairy products, and items such as dry cleaning, envelopes, packages and parcels
- Perform pre-trip inspection of vehicle
- Sell products over established routes and accept or make payments for goods
- Record information on pick-ups and deliveries, vehicle mileage, fuel costs and any problems encountered
- May communicate with central dispatch using cellular telephone or citizens' band (CB) radio.

Employment requirements

- Completion of secondary school may be required.
- A driver's licence appropriate to the class of vehicle being driven is required.
- One year of safe driving experience is usually required.
- On-the-job training is provided.
- Eligibility for bonding and transportation of dangerous goods (TGD) certification may be required for courier drivers.

Additional information

- Progression to supervisory positions or to non-driving occupations, such as driver trainer or dispatcher is possible with additional training or experience.

Classified elsewhere

- *Couriers, Messengers and Door-to-Door Distributors* (1463)
- Delivery truck helpers (in *7622 Railway and Motor Transport Labourers*)
- *Dispatchers and Radio Operators* (1475)
- Drivers of heavy trucks (in *7411 Truck Drivers*)
- Garbage truck drivers (in *7422 Public Works Maintenance Equipment Operators*)
- Supervisors of delivery drivers (in *7222 Supervisors, Motor Transport and Other Ground Transit Operators*)

7421 Heavy Equipment Operators (Except Crane)

Heavy equipment operators operate heavy equipment used in the construction and maintenance of roads, bridges, airports, gas and oil pipelines, tunnels, buildings and other structures; in surface mining and quarrying activities; and in material handling work. They are employed by construction companies, heavy equipment contractors, public works departments and pipeline, logging, cargo-handling and other companies.

Example titles

backhoe operator
bulldozer operator
excavator operator
gradall operator
grader operator

heavy equipment operator
heavy equipment operator apprentice
loader operator – construction
side boom tractor operator
surface mining equipment operator

Main duties

Heavy equipment operators perform some or all of the following duties:

- Operate heavy equipment such as backhoes, bulldozers, loaders and graders to excavate, move, load and grade earth, rock, gravel or other materials during construction and related activities
- Operate bulldozers or other heavy equipment to clear brush and stumps prior to logging activities and to build roads at logging and surface mining sites
- Operate heavy equipment with pile driver head to drive piling into earth to provide support for buildings, bridges or other structures
- Operate heavy dredging equipment to deepen waterways or reclaim earth fill
- Operate heavy paving and surfacing equipment to lay, spread or compact concrete, asphalt and other surface materials during highway and road construction
- Operate power shovels to excavate rock, ore or other materials from open-pit mines, strip mines, quarries or construction pits
- Operate heavy equipment to move, load and unload cargo
- Conduct pre-operational checks on equipment and clean, lubricate and refill equipment.

Employment requirements

- Some secondary school education is required.
- Completion of a one- to two-year apprenticeship program
or

Some high school, college or industry courses in heavy equipment operating combined with on-the-job training are required.

- Trade certification is compulsory in Quebec and available, but voluntary, in Newfoundland and Labrador, Nunavut and the Northwest Territories.

- Internal company certification may be required by some employers.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Contractors and Supervisors, Heavy Construction Equipment Crews* (7217)
- *Crane Operators* (7371)
- Forklift and industrial truck operators (in 7452 *Material Handlers*)
- *Logging Machinery Operators* (8241)
- *Underground Production and Development Miners* (8231)

7422 Public Works Maintenance Equipment Operators

This unit group includes workers who operate vehicles and equipment to maintain streets, highways and sewer systems and operate garbage trucks to remove garbage and refuse. They are employed by municipal, provincial and federal public works departments and by private contractors under contract with government public works departments.

Example titles

garbage truck driver
municipal maintenance equipment operator
public works maintenance equipment operator
salt truck operator
sand spreader operator
sanitation truck driver

sewer flusher operator-driver – public works
sewer-flushing truck operator
snow removal equipment operator – public works
street flusher operator
street sweeper operator
street sweeper operator – public works

Main duties

Public works maintenance equipment operators perform some or all of the following duties:

- Operate garbage trucks to remove garbage and other refuse and dump loads at designated sites
- Operate street cleaning equipment such as street sweepers or other vehicles equipped with rotating brushes to remove sand, litter and trash
- Operate snowploughs or trucks fitted with plough blades to remove snow from streets, highways, parking lots and similar areas
- Operate sewer maintenance equipment such as rodders and sewer jet cleaners to maintain and repair sewer systems
- Operate trucks equipped with road sanding and other similar apparatus
- Check, lubricate, refuel and clean equipment and report any malfunctions to supervisor.

Employment requirements

- Some secondary school may be required.
- Experience as a public works labourer is usually required.
- On-the-job training is provided.
- A driver's licence appropriate to a specific type of equipment may be required.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Heavy Equipment Operators (Except Crane) (7421)*
- *Public Works and Maintenance Labourers (7621)*
- Supervisors of public works maintenance equipment operators (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)
- *Truck Drivers (7411)*

7431 Railway Yard Workers

Railway yard workers regulate yard traffic, couple and uncouple trains and perform related yard activities. They are employed by railway transport companies.

Example titles

car controller – railway
control tower operator – railway
signal tower operator – railway
switch tender – railway yard

towerman/woman – railway transport
yard coupler – railway
yard worker – railway

Main duties

Railway yard workers perform some or all of the following duties:

- Operate control panel switches from railway yard tower to set traffic signals and to activate train switches that regulate railway traffic in railway yards
- Operate car retarders, turntables and track switches to align locomotives and cars as required for coupling, uncoupling or servicing
- Switch cars according to instructions which indicate the location, disposition and number of cars
- Lubricate moving parts of railway cars and locomotives.

Employment requirements

- Some secondary school education is usually required.
- Experience as a railway labourer is required.
- On the job training is provided
- Railway yard workers require a Canadian Rail Operating Rules certificate.

Additional information

- Progression to a position such as brakeman is possible with experience.

Classified elsewhere

- *Railway and Motor Transport Labourers* (7622)
- *Railway Conductors and Brakemen/women* (7362)
- *Railway Track Maintenance Workers* (7432)
- Supervisors of railway yard workers (in 7221 *Supervisors, Railway Transport Operations*)

7432 Railway Track Maintenance Workers

Railway track maintenance workers operate machines and equipment to lay, maintain and repair railway tracks. They are employed by railway transport companies.

Example titles

ballast regulator operator – railway
equipment operator, railway
machine operator – railway
rail saw operator
section worker – railway

spike machine operator – railway
tie tamper operator – railway
trackman/woman, railway
track patroller, railway

Main duties

Railway track maintenance workers perform some or all of the following duties:

- Operate machines and equipment such as tie cutters, tie injectors, tie anchors, rail lifters, spike drivers, spike pullers, rail saws and tie cranes to lay, maintain and repair railway tracks
- Operate machines and equipment to align tracks, to transfer, spread, level and tamp ballast around ties and rails and to clear snow from tracks
- Clean and make minor repairs to machines and equipment
- Patrol assigned track sections to identify and report damaged or broken track
- Shovel ice and snow from track switch boxes
- Perform other track maintenance duties as directed.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.

Classified elsewhere

- *Railway and Motor Transport Labourers* (7622)
- *Railway Yard Workers* (7431)
- *Supervisors, Railway Transport Operations* (7221)

7433 Deck Crew, Water Transport

Workers in this unit group stand watch, operate and maintain deck equipment and perform other deck and bridge duties aboard ships or self-propelled vessels under the direction of deck officers. They are employed by marine transportation companies and federal government departments including the armed forces.

Example titles

able seaman/woman
boatswain – military
deckhand

ordinary seaman/woman
tunnel operator, ship
wheelsman/woman

Main duties

Workers in this unit group perform some or all of the following duties:

- Stand watch and steer ship or self-propelled vessel under the direction of the officer on watch
- Operate, maintain and repair deck equipment such as winches, cranes, derricks and hawsers
- Clean, chip and paint deck surfaces
- Handle mooring lines, and splice and repair ropes, wire cables and cordage.

Employment requirements

- Some secondary school education is required.
- On-the-job training is provided.
- Senior positions in this unit group, such as able seaman/woman, require experience.

Additional information

- Training and testing for various endorsements and certification, including the Marine Emergency Duty (MED) certificate, occur following employment as a deck crew member.
- Progression to deck officer positions is possible with experience, additional training and deck officer certification by Transport Canada.

Classified elsewhere

- *Boat Operators* (7436)
- *Deck Officers, Water Transport* (2273)
- *Engineer Officers, Water Transport* (2274)
- *Engine Room Crew, Water Transport* (7434)
- *Fishing Vessel Deckhands* (8441)

7434 Engine Room Crew, Water Transport

Workers in this unit group assist ship engineer officers to operate, maintain and repair engines, machinery and auxiliary equipment aboard ships or self-propelled vessels. They are employed by marine transportation companies and federal government departments including the armed forces.

Example titles

engine room crew, ship
greaser, engine room
marine engineering mechanic – military

marine engine oiler
ship boiler tender
ship stoker

Main duties

Workers in this unit group perform some or all of the following duties:

- Assist ship engineer officers in performing routine maintenance work and repair to ship's engine, machinery and auxiliary equipment
- Monitor engine, machinery and equipment indicators, record variables and report abnormalities to ship engineer officer on watch
- Lubricate moving parts of engines, machinery and auxiliary equipment
- Operate and maintain off-loading liquid pumps and valves
- Clean engine parts and keep engine room clean.

Employment requirements

- Some secondary school education is required.
- On-the-job training is provided.

Additional information

- Training and testing for various endorsements and certification, including the Marine Emergency Duty (MED) certificate, occur following employment as an engine room crew member.
- Progression to ship engineer officer positions is possible with experience, additional training and certification by Transport Canada.

Classified elsewhere

- *Deck Crew, Water Transport (7433)*
- *Deck Officers, Water Transport (2273)*
- *Engine Officers, Water Transport (2274)*

7435 Lock and Cable Ferry Operators and Related Occupations

This unit group includes workers who operate lock gates, bridges and similar equipment along canal systems, workers who operate cable ferries and ferry terminal workers. They are employed by the federal government, cable ferry companies and in ferry terminals.

Example titles

bridgemaster
cable ferry operator
canal lock operator
ferry terminal worker

linesman/woman – canal lock system
loading bridge operator
lockmaster

Main duties

Lock equipment operators perform some or all of the following duties:

- Operate telecommunication equipment or use portable loudspeakers to direct movements of vessels in lock area
- Operate controls to open or close lock gates
- Operate controls to raise, lower or turn bridges
- Observe progress of vessels passing through locks.

Cable ferry operators perform some or all of the following duties:

- Signal passengers and motor vehicles to embark and disembark
- Operate cable ferry across narrow waterway
- Perform routine maintenance and repairs to engine, cables and winches.

Ferry terminal workers perform some or all of the following duties:

- Operate controls to adjust landing bridge, position or remove gangplank, open or close doors and gates, and secure or remove docking devices
- Signal passengers and motor vehicles to embark and disembark
- May collect tickets or fares from passengers.

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.

Additional information

- There is little or no mobility among lock equipment operators, cable ferry operators and ferry terminal workers.

7436 Boat Operators

Boat operators operate small boats or crafts to transport passengers or freight, or perform other duties. They are employed by marine companies that provide sightseeing tours or water taxi services and by canal, port and harbour authorities.

Example titles

charter boat operator
launch master
motor boat operator
scow captain

sightseeing boat operator
small craft operator
water taxi operator

Main duties

Boat operators perform some or all of the following duties:

- Operate motorboats, launches, small ferry boats and other similar vessels to transport passengers or freight
- Maintain boats and equipment on board, such as engines, winches, derricks, fire extinguishers and life preservers
- May perform other duties, such as checking for oil spills or other pollutants around ports and harbours, patrolling beaches and measuring depth of water.

Employment requirements

- Some secondary school education is required.
- On-the-job training is provided.
- Master of a Small Craft or Master of a Small Passenger Craft certificate, issued by Transport Canada, is required.

Additional information

- Mobility between boat operators in this unit group is possible.
- Progression to deck officer positions is possible with additional training, experience and certification.

Classified elsewhere

- Cable ferry operators (in 7435 *Lock and Cable Ferry Operators and Related Occupations*)
- *Deck Crew, Water Transport* (7433)
- Ferryboat operator and ship pilots (in 2273 *Deck Officers, Water Transport*)

7437 Air Transport Ramp Attendants

Air transport ramp attendants operate ramp-servicing vehicles and equipment, handle cargo and baggage and perform other ground support duties at airports. They are employed by airline and air services companies and the federal government.

Example titles

aircraft groomer

airport ramp attendant

cargo attendant, air transport

ramp agent, air transport

ramp attendant, air transport

station attendant, air transport

Main duties

Air transport ramp attendants perform some or all of the following duties:

- Drive and operate ramp-servicing vehicles and equipment such as towing tractors, food service trucks, de-icer sprayers and lavatory servicing trucks
- Position passenger loading stairs and operate aircraft cargo doors
- Marshal or tow aircrafts to gate positions for passenger boarding and deplaning and for loading and unloading of cargo
- Sort and load cargo and passenger baggage according to instructions forwarded by load planner to achieve proper balance
- Unload, sort and route cargo and baggage
- Transport freight between aircraft and airport warehouse
- Clean and prepare aircraft interior for passengers and wash aircraft exterior.

Employment requirements

- Completion of secondary school is usually required.
- Experience operating baggage transporting equipment or warehouse experience may be required.
- A driver's licence and a good driving record are usually required.

Additional information

- There is mobility among jobs in this unit group.

Classified elsewhere

- Airline load planners (in 6433 *Airline Sales and Service Agents*)
- Baggage handlers (in 6672 *Other Attendants in Accommodation and Travel*)
- *Material Handlers* (7452)

7441 Residential and Commercial Installers and Servicers

Workers in this unit group install and service a wide variety of interior and exterior prefabricated products such as windows, doors, electrical appliances, water heaters, fences, play structures and septic systems, at residential or commercial properties. They are employed by companies specializing in specific product installation and service.

Example titles

aluminum window installer
cavestrough installer
electric appliance installer
exterior cladding
fence erector
hot tub installer
kitchen cupboard and vanity installer

recreation structure erector
siding installer
sign installer
swimming pool installer
water conditioner servicer
water heater servicer
window installer

Main duties

Installers and servicers in this unit group perform some or all of the following duties:

- Read blueprints or work order specifications to determine layout and installation procedures
- Measure and mark guidelines to be used for installations
- Install, repair and service interior prefabricated products such as doors, windows, kitchen cupboards, bathroom vanities, water heaters and household appliances using hand and power tools
- Install, repair and service exterior prefabricated products such as siding, shutters, awnings, fencing, decks, septic systems, signs and play structures using hand and power tools.

Additional information

- There is some mobility among the various types of installers and servicers in this unit group.

Classified elsewhere

- Central air conditioner installers (in 7313 *Refrigeration and Air Conditioning Mechanics*)
- Supervisors of workers in this unit group (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

Employment requirements

- Some secondary school education is usually required.
- On-the-job training and several months of related installing, repairing or servicing experience are usually required.
- A driver's licence may be required.

7442 Waterworks and Gas Maintenance Workers

Waterworks maintenance workers maintain and repair waterworks equipment and facilities. They are employed in water filtration and distribution plants and waste treatment plants. Gas maintenance workers check and perform routine maintenance and minor repairs to exterior and underground gas mains and distribution lines. They are employed by gas distribution companies.

Example titles

gas leak locator
gas maintenance worker
gas utility operator
pipeline maintenance worker

pipeline patrolman/woman
utility plant maintenance worker
waterworks maintenance worker

Main duties

Waterworks maintenance workers perform some or all of the following duties:

- Check, clean and lubricate waterworks equipment, such as pumping equipment, chlorination equipment and compressors
- Adjust and repair waterworks equipment under the direction of qualified tradesperson
- Search and locate reported water leaks and repair water-mains, valves or outlets
- Install water meters using hand and power tools.

Gas maintenance workers perform some or all of the following duties:

- Check and lubricate gas pipeline valves
- Conduct routine survey of gas mains and distribution lines to detect and locate escaping gas using gas detecting devices
- Investigate reports of gas leaks to determine the exact location and extent of leaks
- Dig ground to expose gas lines and repair damaged pipes
- Keep record of work performed and location and condition of pipelines
- Provide information on underground gas distribution lines and observe excavation work to ensure that underground gas facilities are protected.

Employment requirements

- Completion of secondary school may be required.
- Several years of experience as a labourer in the same company may be required.
- On-the-job training is provided.

Additional information

- Mobility between jobs in this unit group normally occurs within the same area of work, such as within waste water treatment plants, within water filtration and distribution plants or within gas distribution plants.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Gas Fitters* (7253)
- Supervisors of water and gas maintenance workers (in 9212 *Supervisors, Petroleum, Gas and Chemical Processing and Utilities*)
- *Water and Waste Plant Operators* (9424)

7443 Automotive Mechanical Installers and Servicers

Workers in this group install replacement automotive mechanical parts such as mufflers, exhaust pipes, shock absorbers, springs and radiators and perform routine maintenance service such as oil changes, lubrication and tire repairs on automobiles, trucks and heavy equipment. They are employed by automobile and truck service and repair shops, service departments of industrial establishments and construction, mining and logging companies.

Example titles

crane greaser
heavy equipment servicer
muffler installer
radiator installer – auto repair service

shock absorber installer
spring installer
tire repairer

Main duties

Automotive mechanical installers and servicers perform some or all of the following duties:

- Change engine oil and lubricate running gears or moving parts of automobiles, trucks and heavy equipment
- Grease booms, pulleys, buckets and other components of heavy equipment
- Replace oil, air and fuel filters on motor vehicles, trucks and heavy equipment
- Install replacement mufflers, exhaust pipes, shock absorbers or radiators on motor vehicles, trucks and heavy equipment
- Repair and balance tires
- Add or replace hydraulic and transmission fluids in motor vehicles, trucks and heavy equipment
- Assist mechanics and perform other duties as directed
- Drive automobile or service truck to location of construction, logging or other industrial sites to provide services.

Employment requirements

- Some secondary school may be required.
- Several months of on-the-job training are usually required.

Additional information

- There is some mobility among installers and servicers in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers* (7321)
- *Heavy-Duty Equipment Mechanics* (7312)
- Supervisors of workers in this unit group (in *7216 Contractors and Supervisors, Mechanic Trades*)

7444 Pest Controllers and Fumigators

Pest controllers and fumigators inspect buildings and outside areas for pest infestation and spray chemical treatments to kill noxious and destructive insects, rodents and other pests or set cage traps to capture and remove animals. They are employed by pest control companies, or they may be self-employed.

Example titles

animal control trapper
exterminator, pests
fumigator, pests
nuisance control trapper

pest controller
pest control operator
pest control technician

Main duties

Pest controllers and fumigators perform some or all of the following duties:

- Inspect buildings and outside areas at regular intervals or at specific request of property owner to detect signs of infestation
- Determine type of treatment required and provide estimate of costs to clients
- Prepare and spray chemical mixture on infested areas using mechanical or electric sprayer to kill insects, rodents and other pests
- Fumigate households
- Place and set traps to capture and remove animals, such as skunks or raccoons
- Install animal control barriers such as needle strips, netting and other devices to keep animals off property
- Clean out areas that harbour pests using rakes, shovels, brooms or mops
- Advise clients on how to prevent pest infestation.

Employment requirements

- Completion of secondary school is usually required.
- Completion of courses in pest control or extermination or several months of on-the-job training are usually required.
- Provincial pesticide applicator licence is required in all provinces.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Supervisors of pest controllers and fumigators (in 7219 Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers)

7445 Other Repairers and Servicers

This unit group includes workers, not elsewhere classified, who repair and service a wide variety of products, such as cameras, scales, musical instruments, coin machines, vending machines, sporting goods and other miscellaneous products and equipment. They are employed by product specialty repair shops and service establishments.

Example titles

bicycle repairer
camera repairer
meter repairer
piano repairer

scale repairer
sewing machine servicer – domestic
sporting goods repairer
vending machine repairer

Main duties

Repairers and servicers in this unit group perform some or all of the following duties:

- Inspect products to determine the requirement for repair
- Repair or replace defective or worn out parts and components using hand, power or specially designed tools
- Test and adjust repaired products for proper functioning
- Perform routine maintenance
- May calibrate products using hand tools.

Employment requirements

- Some secondary school education is usually required.
- Completion of college or other courses relevant to a particular equipment or product repair
or
Completion of several months of on-the-job training is usually required.

Additional information

- Some mobility may occur among workers in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- Locksmiths (in 7383 *Other Trades and Related Occupations*)
- Supervisors of workers in this unit group (in 7219 *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers*)

7451 Longshore Workers

Longshore workers transfer cargo throughout dock area and onto and from ships and other vessels. They are employed by marine cargo handling companies, shipping agencies and shipping lines.

Example titles

dockworker
longshoreman/woman
longshore worker

ship loader operator
stevedore
tanker loader

Main duties

Longshore workers perform some or all of the following duties:

- Operate industrial trucks, tractors and other mobile equipment to transfer cargo, such as containers, crated items, automobiles and pallet-mounted machinery, around dock to within range of cranes and hoists
- Operate winches or other hoisting devices to load and unload cargo onto and from ships and other vessels
- Operate mechanical towers to load vessels with materials such as coal and ore
- Operate equipment to transfer bulk materials, such as grain, to hold of vessels
- Connect hoses and operate equipment to transfer liquid materials into storage tanks on vessels
- Perform other activities such as lashing and shoring cargo aboard ships, opening and closing hatches, cleaning holds of ships and rigging cargo.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is provided.

Additional information

- Progression to foreman/woman or supervisor of longshore workers is possible with experience.

Classified elsewhere

- Longshore crane operators (in 7371 *Crane Operators*)
- *Material Handlers* (7452)
- Supervisors of longshore workers (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)

7452 Material Handlers

This unit group includes workers who handle, move, load and unload materials by hand or using a variety of material handling equipment. They are employed by transportation, storage and moving companies, and by a variety of manufacturing and processing companies and retail and wholesale warehouses.

Example titles

bin filler	material handler
coal handler	railway car loader
conveyor console operator	stockpiler
forklift truck operator	storage worker – material handling
freight handler (except air transport)	truck loader
furniture mover	warehouseman/woman
lumber piler – building supplies	

Main duties

Material handlers (manual) perform some or all of the following duties:

- Load, unload and move products and materials by hand or using basic material handling equipment
- Move household appliances and furniture onto and off moving trucks or vans
- Set up rooms for events, dismantle moveable walls and partitions, and organize or set up office furniture
- Perform other material handling activities such as counting, weighing, sorting, packing and unpacking.

Material handlers (equipment operators) perform some or all of the following duties:

- Operate winches and other loading devices to load and unload materials onto and off trucks, railway cars and loading docks of warehouses and industrial establishments
- Operate industrial trucks, tractors, loaders and other equipment to transport materials to and from transportation vehicles and loading docks and to store and retrieve materials in warehouses
- Connect hoses or pipes and operate equipment to load and unload liquid petroleum, chemical or other products into or from tank cars, tank trucks or storage tanks
- Operate equipment to dump materials such as coal, ore and grain into or to remove materials from railway cars, trucks or other vehicles
- Operate conveyors and equipment to transfer grain or other materials from transportation vehicles to elevators, bins or other storage areas

- May perform other activities, such as opening containers and crates, filling warehouse orders, assisting in taking inventory and weighing and checking materials.

Employment requirements

- Some secondary school education may be required.
- Physical strength is required for manual material handlers who work with heavy materials.

Classified elsewhere

- Freight attendants (in 7437 *Air Transport Ramp Attendants*)
- *Heavy Equipment Operators (Except Crane)* (7421)
- *Longshore Workers* (7451)
- Mover helpers (in 7622 *Railway and Motor Transport Labourers*)
- *Storekeepers and Parts Clerks* (1472)
- Supervisors of material handlers (in 7217 *Contractors and Supervisors, Heavy Construction Equipment Crews*)
- Warehouse supervisors (in 1215 *Supervisors, Recording, Distributing and Scheduling Occupations*)

7611 Construction Trades Helpers and Labourers

Construction trades helpers and labourers assist skilled tradespersons and perform labouring activities at construction sites, in quarries and in surface mines. They are employed by construction companies, trade and labour contractors, and surface mine and quarry operators.

Example titles

asphalt spreader	flagman/woman
bricklayer helper	glazier helper
carpenter helper	labourer, concrete paving
concrete mixer helper	labourer, excavation
construction helper	pipeline mandrel operator
construction labourer	plumber helper
demolition worker	roofer helper
driller helper – surface mining	stabber – pipeline construction
drywall sander	

Main duties

Construction trades helpers and labourers perform some or all of the following duties:

- Load and unload construction materials, and move materials to work areas
- Erect and dismantle concrete forms, scaffolding, ramps, catwalks, shoring and barricades required at construction sites
- Mix, pour and spread materials such as concrete and asphalt
- Assist tradespersons such as carpenters, bricklayers, cement finishers, roofers and glaziers in construction activities
- Assist heavy equipment operators to secure special attachments to equipment, signal operators to guide them in moving equipment and provide assistance in other activities
- Assist in aligning pipes and perform related activities during oil and gas pipeline construction
- Assist in drilling and blasting rock at construction sites
- Assist miners in excavating and in setting up and operating various drills and other surface mining machinery
- Level earth to fine grade specifications using rake and shovel
- Assist in demolishing buildings using prying bars and other tools, and sort, clean and pile salvaged materials
- Remove rubble and other debris at construction sites using rakes, shovels, wheelbarrows and other equipment
- Operate pneumatic hammers, vibrators and tampers as directed

- Tend or feed machines or equipment used in construction such as mixers, compressors and pumps
- Clean up chemical spills and other contaminants, and remove asbestos and other hazardous materials
- Oil and grease hoists and similar equipment
- Direct traffic at or near construction sites
- Perform other activities at construction sites, as directed.

Employment requirements

- Some experience as a general construction labourer may be required for construction trade helpers.
- Some pipeline workers, such as stabbers, mandrel operators and pre-heater tenders, usually require one season of experience in oil and gas pipeline construction.
- Flagmen/women may require a traffic control certificate.

Additional information

- Mobility is possible among workers in this unit group.

Classified elsewhere

- *Other Trades Helpers and Labourers* (7612)
- *Public Works and Maintenance Labourers* (7621)

7612 Other Trades Helpers and Labourers

This unit group includes trade helpers and labourers, not elsewhere classified, who assist skilled tradespersons and perform labouring activities in the installation, maintenance and repair of industrial machinery, refrigeration, heating and air conditioning equipment, in the maintenance and repair of transportation and heavy equipment, in the installation and repair of telecommunication and power cables and in other repair and service work settings. They are employed by a wide variety of manufacturing, utility and service companies.

Example titles

aerial spraying assistant
aircraft mechanic helper
cable installer helper
diesel mechanic helper
ground worker – telecommunications

mechanic's helper – automotive
millwright helper
refrigeration mechanic helper
splicer helper – telecommunications
surveyor helper

Main duties

Trade helpers and labourers in this unit group perform some or all of the following duties:

- Move tools, equipment and other materials to and from work areas
- Assist in splicing overhead and underground communications and electric power transmission cables
- Assist in repairing, maintaining and installing industrial machinery and equipment
- Assist in repairing, maintaining and installing refrigeration, heating and air conditioning equipment
- Assist in repairing, maintaining and installing elevators
- Assist in repairing and maintaining stationary electric power generating and distribution equipment
- Assist in mechanical, electrical and body repairs of aircraft, railway cars, automobiles, trucks, buses, heavy equipment and motorcycles
- Assist in repairing electrical appliances, small engines or other similar equipment
- Mix fertilizers, herbicides and pesticides and load mixture into airplane for aerial spraying
- Assist in land surveying activities, such as holding or moving stakes and rods, clearing brush and debris from line of survey and transporting surveying tools to work area
- Perform other labouring and elemental tasks as required.

Employment requirements

- Some secondary school education may be required.
- On-the-job training is provided.

Additional information

- There is little or no mobility between occupations in this unit group.

Classified elsewhere

- *Construction Trades Helpers and Labourers* (7611)

7621 Public Works and Maintenance Labourers

Public works and maintenance labourers perform a variety of labouring activities to maintain sidewalks, streets, roads and similar areas. They are employed by municipal, provincial and federal government public works departments or by private contractors under contract to governments.

Example titles

garbage collector
helper – garbage collection
municipal labourer
parking meter collector

public works labourer
road maintenance worker
sewer maintenance worker
sidewalk cleaner

Main duties

Public works and maintenance labourers perform some or all of the following duties:

- Clean and maintain sidewalks, streets, roads and public grounds of municipality and other areas, working as member of crew
- Sweep debris and shovel snow from streets, sidewalks, building grounds and other areas, and load snow and debris into carts or trucks
- Shovel cement and other materials into cement mixers, spread concrete and asphalt on road surfaces using shovels, rakes and hand tampers, and perform other activities to assist in maintenance and repair of roads
- Spread sand or salt on sidewalks for snow and ice control
- Dig ditches and trenches using shovels and other hand tools
- Operate jackhammers and drills to break up pavement
- Operate power mowers and cutters to cut lawns and grass along roadsides
- Cut trees, trim branches, rake leaves, apply fertilizer and insecticides by hand, and water public lawns, trees and shrubs
- Load and unload trucks with supplies and equipment
- Collect money from coin boxes of parking meters along established route
- Collect and load refuse on garbage trucks
- Assist equipment operators to secure attachments to equipment or trucks
- Assist in routine maintenance and repair of equipment
- Assist skilled tradespersons such as carpenters, plumbers and mechanics
- May operate mobile sidewalk-cleaning equipment.

Employment requirements

- Several weeks of on-the-job training are provided.

Additional information

- Progression to supervisory positions or to public works maintenance equipment operator positions is possible with experience.

Classified elsewhere

- Construction labourers (in 7611 *Construction Trades Helpers and Labourers*)
- Park maintenance labourer (in 8612 *Landscaping and Grounds Maintenance Labourers*)
- *Public Works Maintenance Equipment Operators* (7422)
- *Railway and Motor Transport Labourers* (7622)

7622 Railway and Motor Transport Labourers

Railway and motor transport labourers perform a variety of tasks to assist track maintenance workers and railway yard workers, or motor transport operators. They are employed by railway transport companies and motor transport companies.

Example titles

car checker, railway delivery truck helper furniture mover helper mover helper

railway labourer signal gang helper swamper – truck transport truck driver helper

Main duties

Railway labourers perform some or all of the following duties:

- Transport tools and equipment on push or hand car and perform other duties to assist railway track maintenance workers to lay, maintain and repair railway tracks
- Cut vegetation growth from railway tracks using scythes and mowers
- Check freight cars for physical damage and cleanliness.

Motor transport labourers perform some or all of the following duties:

- Assist truck and delivery drivers to load and unload vehicles
- Perform labouring duties in warehouses.

Employment requirements

- Some secondary school education is usually required.

Additional information

- With experience, railway labourers may progress to railway track maintenance workers or railway yard workers.

Classified elsewhere

- *Material Handlers* (7452)
- Rail car oilers and greasers (in 7431 *Railway Yard Workers*)
- *Railway Track Maintenance Workers* (7432)

OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY

Major Group 82

SKILLED OCCUPATIONS IN PRIMARY INDUSTRY

821 Supervisors, Logging and Forestry

8211 Supervisors, Logging and Forestry

822 Supervisors, Mining, Oil and Gas

8221 Supervisors, Mining and Quarrying

8222 Supervisors, Oil and Gas Drilling and Service

823 Underground Miners, Oil and Gas Drillers and Related Workers

8231 Underground Production and Development Miners

8232 Oil and Gas Well Drillers, Servicers, Testers and Related Workers

824 Logging Machinery Operators

8241 Logging Machinery Operators

825 Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture

8251 Farmers and Farm Managers

8252 Agricultural and Related Service Contractors and Managers

8253 Farm Supervisors and Specialized Livestock Workers

8254 Nursery and Greenhouse Operators and Managers

8255 Landscaping and Grounds Maintenance Contractors and Managers

8256 Supervisors, Landscape and Horticulture

8257 Aquaculture Operators and Managers

826 Fishing Vessel Masters and Skippers and Fishermen/women

8261 Fishing Masters and Officers

8262 Fishing Vessel Skippers and Fishermen/women

Major Group 84

INTERMEDIATE OCCUPATIONS IN PRIMARY INDUSTRY

841 Mine Service Workers and Operators in Oil and Gas Drilling

8411 Underground Mine Service and Support Workers

8412 Oil and Gas Well Drilling Workers and Services Operators

842 Logging and Forestry Workers

8421 Chain Saw and Skidder Operators

8422 Silviculture and Forestry Workers

843 Agriculture and Horticulture Workers

- 8431 General Farm Workers
- 8432 Nursery and Greenhouse Workers

844 Other Fishing and Trapping Occupations

- 8441 Fishing Vessel Deckhands
- 8442 Trappers and Hunters

Major Group 86

LABOURERS IN PRIMARY INDUSTRY

861 Primary Production Labourers

- 8611 Harvesting Labourers
- 8612 Landscaping and Grounds Maintenance Labourers
- 8613 Aquaculture and Marine Harvest Labourers
- 8614 Mine Labourers
- 8615 Oil and Gas Drilling, Servicing and Related Labourers
- 8616 Logging and Forestry Labourers

8211 Supervisors, Logging and Forestry

Supervisors in this unit group supervise and co-ordinate the activities of workers engaged in logging operations and silvicultural operations. They are employed by logging companies, contractors and government agencies.

Example titles

forest operations supervisor
forestry crew supervisor
hook tender
logging contractor

logging foreman/woman
production supervisor – logging
silviculture supervisor
woods foreman/woman

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise and co-ordinate the activities of logging and forestry workers in woodland operations, often in several work locations over several square kilometres
- Supervise silvicultural activities such as scarification, planting and vegetation control
- Schedule work crews, equipment and transportation for several work locations
- Resolve work problems and recommend measures to improve work methods
- Instruct workers in safety, recognize unsafe work conditions and modify work procedures
- Ensure that government regulations are met
- Communicate with forestry technical, professional and management personnel regarding forest harvesting and forest management plans, procedures and schedules
- Prepare production and other reports
- Hire and train new workers.

Employment requirements

- Completion of secondary school is usually required.
- Completion of a one- to three-year college program for forestry technologists or technicians may be required.
- Formal company training and several months of on-the-job training are provided.
- Several years of experience as a logger, silvicultural worker, or logging machinery operator are usually required.
- A chemical application licence may be required.
- An industrial first aid certificate may be required.

Classified elsewhere

- *Chain Saw and Skidder Operators* (8421)
- *Forestry Technologists and Technicians* (2223)
- *Logging and forestry managers* (in 0811 *Primary Production Managers (Except Agriculture)*)
- *Logging Machinery Operators* (8241)
- *Silviculture and Forestry Workers* (8422)

8221 Supervisors, Mining and Quarrying

Supervisors in this unit group supervise and co-ordinate activities of workers engaged in underground and surface mining operations and quarries. They are employed by coal, metal and non-metallic mineral mines and quarries.

Example titles

fill foreman/woman	supervisor, mine
foreman/woman, underground mine	supervisor, quarry
level boss	supervisor, surface mine
mine captain	track boss
mine foreman/woman	yard boss
shift boss	

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who extract coal, minerals and ore; operate underground conveyances; and perform other services in support of underground mining, or of heavy equipment operators, drillers, blasters and other workers in surface mining and quarrying
- Establish methods to meet work schedules and confer with managerial and technical personnel, other departments and contractors to resolve problems and co-ordinate activities
- Oversee the safety of the mining or quarrying operation
- Resolve work problems and recommend measures to improve productivity
- Requisition materials and supplies
- Train workers in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports.

Employment requirements

- Completion of secondary school is required.
- Completion of a college or university program in mining technology or engineering may be required for some positions in this group.
- Several years of experience in the occupations supervised are usually required.
- Provincial certification as an underground mine supervisor, shift boss, or coal mining supervisor may be required.

Additional information

- There is mobility between employers especially for supervisors with post-secondary diplomas or degrees.
- Mobility between surface mining, underground mining, coal or metal mining sectors may be somewhat limited by differences in production technologies and licensing requirements.

Classified elsewhere

- *Drillers and Blasters – Surface Mining, Quarrying and Construction* (7372)
- *Heavy Equipment Operators (Except Crane)* (7421)
- *Mine Labourers* (8614)
- Mine managers (in 0811 *Primary Production Managers (Except Agriculture)*)
- *Underground Mine Service and Support Workers* (8411)
- *Underground Production and Development Miners* (8231)

8222 Supervisors, Oil and Gas Drilling and Service

Supervisors in this unit group supervise and co-ordinate the activities of workers engaged in drilling for oil or gas, operating service rigs, or providing oil and gas well services. They are employed by drilling and well service contractors and by petroleum producing companies.

Example titles

fracturing supervisor
multi-service operator
rig manager

toolpusher
well services crew supervisor

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who drill for oil and gas, operate service rigs or provide oil and gas well services
- Establish methods to meet work schedules and co-ordinate work activities with other departments
- Requisition materials and supplies
- Resolve work problems and recommend measures to improve productivity
- Train workers in job duties, safety procedures and company policies
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports
- May set up machines and equipment.

Additional information

- There is little mobility for supervisors from well services to well drilling.

Classified elsewhere

- *Oil and Gas Well Drillers, Servicers, Testers and Related Workers* (8232)
- *Oil and Gas Well Drilling Workers and Services Operators* (8412)
- *Primary Production Managers (Except Agriculture)* (0811)

Employment requirements

- Completion of secondary school is required.
- Completion of college or Petroleum Industry Training Service (PITS) courses is required.
- Extensive experience of up to eight years in the occupations supervised is required.
- A two-year college diploma in petroleum engineering technology may be required.
- Certificates in first aid, hydrogen sulphide awareness, blowout prevention, well control, workplace hazardous materials information system (WHMIS), transportation of dangerous goods (TDG) or other safety and technical subjects are required and are obtained by completing short courses.

8231 Underground Production and Development Miners

Underground production and development miners drill, blast, operate mining machinery, and perform related duties to extract coal and ore in underground mines and to construct tunnels, passageways and shafts to facilitate mining operations. They are employed by coal, metal and non-metallic mineral underground mines and by specialized contractors in mine construction, shaft sinking and tunnelling.

Example titles

blaster – underground mining
chute blaster
diamond driller – underground mining
drift miner
driller – underground mining
faceman/woman – coal mine
hoist operator – underground mining
jumbo drill operator

miner
mining machine operator
mucking machine operator
raise miner
roadheader operator
scooptram operator
shaft inspector
shot firer

Main duties

Underground production and development miners perform some or all of the following duties:

- Set up and operate drills and drilling machines to produce a designated pattern of blasting holes
- Operate diamond drills or other specialized drills such as raise boring machinery to test geological formations or to produce underground passageways
- Set up and operate mining machinery to shear coal, rock or ore from the working face
- Load explosives, set fuses, and detonate explosives to produce desired blasting patterns and rock fragmentation in underground mines
- Operate scooptram, load-haul-dump (LHD) machine or mucking machine to load and haul ore from stopes, drifts and drawpoints to ore passes
- Perform duties required to ensure safety and to support the mining advance, such as scaling loose rock from walls and roof, drilling and installing rock bolts, extending and installing air and water pipes, operating ore loading machinery, inspecting mine shafts, operating hoists that transport people, equipment and materials through mine shafts, and constructing timber supports and cribbing if required
- Perform routine maintenance of mining machinery.

Employment requirements

- Completion of secondary school is usually required.

- Formal training of up to six weeks followed by extended periods of specialized training as a helper or in support occupations is usually provided.
- Previous experience as a mine labourer or in other mine occupations is usually required.
- Provincial blasting licence may be required.
- May be certified in the basic common core program or as an underground hard rock miner in Ontario.
- Trade certification for miners is available, but voluntary, in Quebec and Manitoba.
- Company licensing or certification is often required for occupations in this unit group.
- Certificate in first aid may be required.

Additional information

- Progression to mining supervisor is possible with experience.
- Mobility is possible to other occupational groups in underground mining such as underground service and support occupations.
- There is mobility between employers within each of the three following sectors: underground coal mining, underground hard rock mining and underground potash, salt or soft rock mining.
- Mobility between these sectors is somewhat limited by differences in production technologies.

8231 Underground Production and Development Miners

Classified elsewhere

- *Drillers and Blasters – Surface Mining, Quarrying and Construction (7372)*
- *Mine Labourers (8614)*
- *Supervisors, Mining and Quarrying (8221)*
- *Underground Mine Service and Support Workers (8411)*

8232 Oil and Gas Well Drillers, Servicers, Testers and Related Workers

Oil and gas well drillers and well servicers control the operation of drilling and hoisting equipment on drilling and service rigs, and direct the activities of the rig crew under supervision of the rig manager. Oil and gas well loggers, testers and related workers operate specialized mechanical or electronic equipment, tools or instruments to provide services in conjunction with well drilling, completion or servicing. Workers in this unit group are employed by drilling and well service contractors, petroleum producing companies and well logging or testing companies.

Example titles

assistant driller – oil and gas well drilling
directional drilling operator
downhole tool operator
driller – oil and gas drilling
drill stem tester
electric line operator

logging and perforating operator
service rig operator
slickline operator
well testing operator
wireline operator

Main duties

Oil and gas well drillers and well servicers perform some or all of the following duties:

- Direct rig crew in setting up rigs and drilling, completing or servicing oil and gas exploration and producing wells
- Operate controls of drill or service rig drilling and hoisting machinery
- Train or arrange for training of crew
- Maintain records of drilling and servicing operations.

Oil and gas well loggers, testers and related workers perform some or all of the following duties:

- Drive well service or wireline truck to well site
- Assemble and attach equipment, tools or recorders to drill stem or wireline to conduct required procedures and tests
- Operate or direct the operation of wireline or unit controls to lower, position and retrieve equipment and instruments
- Operate recorders and computers in mobile testing or logging unit to collect data
- May perform limited data interpretation.

Employment requirements

- Completion of secondary school is usually required.
- Oil and gas well drillers and well servicers require three to six months of formal on-the-job training, college or Petroleum Industry Training Service (PITS) courses and four or more years of work experience in subordinate rig crew positions.

- A college diploma in drilling may be required.
- Offshore work requires several years of experience in an equivalent position on land.
- Certificates in first aid, hydrogen sulphide awareness, blowout prevention, well control, workplace hazardous materials information system (WHMIS), transportation of dangerous goods (TDG) and a special oil well operator (boiler) certificate are required.
- Oil and gas well loggers, testers and related workers require three to six months of formal on-the-job training and several years of experience in subordinate logging and testing positions or on drilling and servicing rigs.
- Completion of a college program in electronics or engineering technology may be required for open hole well logging.
- Provincial blaster licence, seismic blaster and oil well blaster certification is required for well perforation services.

Additional information

- Progression to crew supervisor or manager is possible with experience and additional education and training.
- Mobility between jobs on drilling and service rigs is limited by the differences in the machinery, tools and operations performed, but mobility is possible especially from drilling to service rigs.

8232 Oil and Gas Well Drillers, Servicers, Testers and Related Workers

Classified elsewhere

- *Oil and Gas Well Drilling Workers and Services Operators* (8412)
- *Supervisors, Oil and Gas Drilling and Service* (8222)
- *Water Well Drillers* (7373)

8241 Logging Machinery Operators

Logging machinery operators operate cable yarding systems, mechanical harvesters and forwarders and mechanical tree processors and loaders to fell, yard and process trees at logging sites. They are employed by logging companies and contractors.

Example titles

Cable yarding system operators

grapple operator – logging
linehorse operator
rigging slinger
steel spar operator
yarder operator

shortwood harvester operator
treelength forwarder operator

Mechanical harvester and forwarder operators

feller buncher operator
feller forwarder operator

Mechanical tree processor and loader operators
chipping machine operator
delimber operator
loader operator – logging
log processor operator
slasher operator – logging

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Cable yarding system operators operate machines to transport trees from logging areas to landing or log loading sites in mountainous terrain in western Canada.
- Mechanical harvester and forwarder operators assess site and terrain and drive heavy equipment to perform a combination of felling, slashing, bucking, bunching and forwarding operations at logging areas.
- Mechanical tree processor and loader operators operate a variety of machines which perform a combination of slashing, bucking, chipping, sorting and loading logs or trees at landing sites.

- Mechanical tree processor and loader operators usually require one to three years of logging experience.
- Certification as a heavy equipment operator may be required.
- Company certification for mobile logging machinery operation may be required.
- Provincial air brake certification may be required in British Columbia, depending on the type of equipment operated.
- Workplace hazardous materials information system (WHMIS) and St. John's first aid certification may be required.
- Knowledge of tree harvesting regulations is required.

Employment requirements

- Completion of secondary school may be required.
- On-the-job training from three to 16 months is provided, depending on the complexity of machinery operated and the type of woodlands operation.
- Experience requirements vary depending on the complexity of machinery operated.
- Mechanical harvester and forwarder operators may require logging experience as a chain saw and skidder operator.
- Feller buncher operators and cable yarder operators usually require three to five years of logging experience.

Additional information

- There is some mobility among jobs in this group from the less complex to more complex machinery operation.
- There is some mobility between employers, particularly in similar types of woodland operations.
- Self-employment as a logging contractor is possible with investment in equipment.
- Logging machinery operators may perform minor repairs and maintenance on their equipment.
- Progression to logging and forestry supervisory positions is possible with experience.

8241 Logging Machinery Operators

Classified elsewhere

- *Chain Saw and Skidder Operators (8421)*
- *Heavy Equipment Operators (Except Crane) (7421)*
- *Silviculture and Forestry Workers (8422)*
- *Supervisors, Logging and Forestry (8211)*
- *Truck Drivers (7411)*

8251 Farmers and Farm Managers

Farmers and farm managers manage the operations and functions of a farm. They are responsible for growing crops, raising and breeding livestock, poultry and other animals and marketing farm products.

Example titles

apiarist	maple syrup producer
apple grower	market gardener
breeder, domestic animals	potato farmer
chicken farmer	rancher
dairy farmer	seed grower
feedlot manager	sod farmer
fruit farmer	vegetable grower
fur farmer	vineyard manager
grape grower	viticulturist
hog breeder	wheat farmer
horse breeder	

Main duties

Farmers and farm managers perform some or all the following duties:

- Manage the overall operation of a farm, ranch or orchard
- Determine the amount and kinds of crops to be grown and livestock to be raised
- Plant, cultivate and harvest crops
- Raise and breed livestock and poultry
- Hire and supervise farm workers
- Establish a marketing program
- Purchase farm machinery, livestock, seed, feed and other supplies
- Maintain farm machinery, equipment and buildings
- Develop and keep financial and production records.

Farmers and farm managers may manage farms specialized in particular crops such as wheat, apples or potatoes or raise particular livestock such as beef cattle, hogs or chickens.

Employment requirements

- Extensive farming experience (obtained as a farmer, farm supervisor or specialized livestock worker or by working on a family farm) is usually required.
- A college diploma in agriculture may be required.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers (8252)*
- *Farm Supervisors and Specialized Livestock Workers (8253)*
- *Nursery and Greenhouse Operators and Managers (8254)*
- *Supervisors, Landscape and Horticulture (8256)*

8252 Agricultural and Related Service Contractors and Managers

Contractors and managers in this unit group operate establishments that provide agricultural services such as livestock and poultry breeding, soil preparation, crop planting, crop spraying, cultivating or harvesting.

Example titles

artificial inseminator
crop dusting contractor
livestock breeding service manager

manager, artificial insemination service
manager, crop harvesting service

Main duties

Contractors and managers in this unit group perform some or all the following duties:

- Manage businesses which provide an agricultural livestock service such as artificial insemination, spraying or shearing of livestock or disinfecting pens, barns or poultry houses
- Manage businesses which provide agricultural crop services such as plowing, irrigating, cultivating, spraying or harvesting
- Hire and train workers
- Negotiate with farmers and farm managers regarding the services to be provided
- Maintain financial and operational records
- May participate in the provision of the service or in the operation of machinery and equipment.

Classified elsewhere

- *Farmers and Farm Managers* (8251)
- *Farm Supervisors and Specialized Livestock Workers* (8253)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Pest Controllers and Fumigators* (7444)
- *Pet Groomers and Animal Care Workers* (6483)
- *Supervisors, Landscape and Horticulture* (8256)

Employment requirements

- Several years of experience related to the agricultural service offered are usually required.
- Contractors and managers providing certain services, such as artificial insemination and pesticide application, may require training certificates and provincial licensing.

8253 Farm Supervisors and Specialized Livestock Workers

Farm supervisors supervise the work of general farm workers and harvesting labourers and perform general farm duties. Specialized livestock workers carry out feeding, health and breeding programs on dairy, beef, sheep, poultry and hog farms and may also supervise general farm workers and harvesting labourers.

Example titles

cattle herdsperson
dairy herdsperson
farm foreman/woman
farm supervisor
feedlot foreman/woman
hog operation supervisor

horse trainer
poultry farm foreman/woman
ranch foreman/woman
swine herdsperson
vegetable farm foreman/woman

Main duties

Farm supervisors perform some or all of the following duties:

- Co-ordinate and supervise the work of general farm workers and harvesting labourers
- Supervise breeding programs and harvest operations
- Develop work schedules and establish procedures
- Maintain quality control and production records
- Perform general farm duties.

Farm supervisors may specialize in dairy, poultry, swine, beef, sheep, fruit, vegetable, mixed, specialty and equine farms.

Specialized livestock workers perform some or all of the following duties:

- Formulate a feeding program
- Maintain livestock performance records
- Carry out a pasture or pen breeding program
- Recognize and treat certain livestock health problems
- Train horses
- Perform general farm duties
- May supervise general farm workers and harvesting labourers.

Specialized livestock workers usually specialize in one type of farm animal, such as beef cattle, dairy cattle or swine.

Employment requirements

- Farm supervisors and specialized livestock workers may require a college certificate or other specialized training in agriculture or livestock husbandry.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers* (8252)
- *Farmers and Farm Managers* (8251)
- *General Farm Workers* (8431)
- *Harvesting Labourers* (8611)

8254 Nursery and Greenhouse Operators and Managers

Nursery and greenhouse operators and managers plan, organize, direct and control the activities of nursery and greenhouse staff who grow and market trees, shrubs, flowers and plants.

Example titles

Christmas tree farm operator

nursery farmer

flower grower

nursery manager

greenhouse farmer

nursery operator

greenhouse manager

plant grower – nursery

greenhouse operator

Main duties

Nursery and greenhouse operators and managers perform some or all of the following duties:

- Plan, organize, direct and control the operations of nurseries and greenhouses
- Establish the environmental conditions required to grow trees, shrubs, flowers and plants, and design planting and care schedules accordingly
- Determine type and quantity of stock to grow
- Supervise staff in planting, transplanting, feeding and spraying stock
- Identify and control insect, disease and weed problems
- Develop marketing plans
- Provide information to customers on gardening and on the care of trees, shrubs, flowers, plants and lawns
- Order materials such as fertilizer, garden and lawn care equipment, and other nursery and greenhouse related accessories
- Hire and supervise staff, oversee training and set work schedules
- Maintain records on stock, finances and personnel.

Classified elsewhere

- *Nursery and Greenhouse Workers (8432)*
- *Supervisors, Landscape and Horticulture (8256)*
- *Turf farmer (in 8251 Farmers and Farm Managers)*

Employment requirements

- Completion of a college program in horticulture is usually required.
- Experience as a nursery or greenhouse supervisor is required.

8255 Landscaping and Grounds Maintenance Contractors and Managers

Landscaping and grounds maintenance contractors and managers plan, organize, direct and control the operations of landscaping, interior plantscaping, lawn care and tree service departments and establishments.

Example titles

grounds maintenance contractor
grounds maintenance manager
interior plantscaping contractor
landscape service contractor
landscaping contractor

landscaping manager
lawn care manager
lawn maintenance contractor
tree service contractor

Main duties

Landscaping and grounds maintenance contractors and managers perform some or all of the following duties:

- Plan, organize, direct and control the operations of landscaping, interior plantscaping, lawn care and tree service establishments
- Tender bids on contracts for landscaping and grounds maintenance work
- Plan and estimate the materials and labour requirements for individual contracts
- Organize and direct the planting and maintenance of trees, gardens, lawns, shrubs and hedges and the construction and installation of fences, decks, patios, walkways and retaining walls
- Hire and supervise staff
- Maintain financial and personnel records.

Employment requirements

- A college diploma or specialized courses in landscaping and horticulture are usually required.
- Experience as a landscape or horticulture supervisor or as a landscape or horticulture technician is required.

Classified elsewhere

- *Contractors and Supervisors, Other Construction Trades, Installers, Repairers and Servicers* (7219)
- *Landscape and Horticulture Technicians and Specialists* (2225)
- *Landscape Architects* (2152)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Supervisors, Landscape and Horticulture* (8256)

8256 Supervisors, Landscape and Horticulture

Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *Landscaping and Grounds Maintenance Labourers* (8612) and *Nursery and Greenhouse Workers* (8432). They are employed by landscaping companies, cemeteries, lawn care and tree service companies, nurseries and greenhouses, and by landscaping departments of government and private establishments.

Example titles

cemetery foreman/woman

greenhouse supervisor

groundskeeping supervisor

horticulture workers supervisor

landscaping foreman/woman

nursery foreman/woman

park caretaker

park supervisor, grounds maintenance

supervisor, nursery workers

supervisor, park labourers

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise and co-ordinate the activities of workers who perform the following duties: maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, interior plantscapes and other landscaped areas; spread topsoil and lay sod; spray, prune, cut and remove trees and shrubs; construct landscape and landscape structures; and plant, cultivate and harvest trees, shrubs, flowers and plants
- Establish work schedules and procedures and co-ordinate activities with other work units
- Resolve work-related problems and prepare and submit progress and other reports
- Train workers in job duties and company policies
- Requisition supplies and materials
- May perform the same duties as workers supervised.

Employment requirements

- Completion of secondary school is usually required.
- Experience in the occupation supervised is required.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Classified elsewhere

- *Landscape and Horticulture Technicians and Specialists* (2225)
- *Landscape Architects* (2152)
- *Landscaping and Grounds Maintenance Contractors and Managers* (8255)
- *Nursery and Greenhouse Operators and Managers* (8254)

8257 Aquaculture Operators and Managers

Aquaculture operators and managers manage operations of facilities which cultivate and harvest fish, shellfish or marine plants for replenishment of wildlife stocks or for commercial sale. They are employed by public or private fish hatcheries and commercial aquatic farms, or they may be self-employed.

Example titles

aquaculture manager
aquaculture operator
fish farmer
fish farm manager
fish farm operator
fish hatchery manager

fish hatchery operator
mussel grower
oyster grower
salmon grower
trout farmer

Main duties

Aquaculture operators and managers perform some or all of the following duties:

- Manage the overall operation of a fish hatchery, fish farm or other aquatic farm
- Identify requirements of the species and select and oversee preparation of site for species cultivation
- Co-ordinate selection and maintenance of brood stock
- Determine food requirements and structure feeding regimes
- Monitor environment and maintain optimum conditions
- Conduct and supervise stock examination to identify disease or parasites, and apply prescribed medicinal substances to control and prevent infection
- Operate and maintain cultivating and harvesting equipment
- Collect and record growth and production data
- Supervise and train aquaculture and fish hatchery support workers and supervise technicians and technologists
- Maintain financial records and establish market strategies, inventory and quality control methods
- Scuba dive to inspect sea farm operations
- Design and construct pens, floating stations and collector strings or fences for sea farms.

- A college diploma in aquaculture or a related field
 - or
- Several years of experience in fishing or aquaculture operations are usually required.
- A commercial aquaculture or fish hatchery licence, permit or lease is required for self-employed aquaculture operators and managers.

Classified elsewhere

- Aquaculture support workers (in 8613 *Aquaculture and Marine Harvest Labourers*)
- Aquaculture technicians (in 2221 *Biological Technologists and Technicians*)

Employment requirements

- Completion of secondary school is usually required.

8261 Fishing Masters and Officers

Fishing masters and officers manage and operate saltwater and freshwater fishing vessels greater than 100 gross tonnes to pursue and land fish and other marine life. They are employed by establishments engaged in operating commercial fishing vessels.

Example titles

captain, fishing vessel

captain, offshore fishing vessel

deck officer, fishing vessel

first mate, fishing vessel

fishing master

master, fishing vessel

mate, fishing vessel

trawler captain

Main duties

Fishing masters and officers perform some or all of the following duties:

- Command fishing vessel to catch fish and other marine life
- Determine areas for fishing, plot courses and compute navigational positions using compass, charts, tables and other aids
- Steer vessels and operate navigational instruments and electronic fishing aids such as colour and paper sounders
- Direct fishing operations and supervise crew activities
- Record fishing progress, crew activities, weather and sea conditions on ship's log
- Select and train vessel crews.

Employment requirements

- Some secondary school education is usually required.
- One to two years of experience as a fishing vessel deckhand is required.
- Captains require one year of service as officer in charge of the watch.
- A Fishing Master's Certificate is required for all occupations in this unit group.
- A commercial fishing licence is required.

Additional information

- Completion of Transport Canada examinations is required to advance from Fishing Master Class IV through Class I. Training programs are provided in provincial training centres.
- Progression to merchant or government vessel officer positions (which require a Marine Officer Certificate) is possible with additional training and experience.

Classified elsewhere

- *Deck Officers, Water Transport* (2273)
- Fishing vessel engineers requiring a Transport Canada licence (in *2274 Engineer Officers, Water Transport*)
- *Fishing Vessel Skippers and Fishermen/women* (8262)

8262 Fishing Vessel Skippers and Fishermen/women

Fishing vessel skippers and fishermen/women operate fishing vessels to pursue and land fish and other marine life. They are usually self-employed owner-operators of fishing vessels.

Example titles

fisherman/woman
fishing vessel skipper
inshore fisherman/woman

lobster fisherman/woman
longliner fisherman/woman
seiner fisherman/woman

Main duties

Fishing vessel skippers and fishermen/women perform some or all of the following duties:

- Operate fishing vessel to pursue and catch fish and other marine life
- Select area for fishing, plot courses and compute navigational positions using compass, charts and other aids
- Steer vessel and operate navigational instruments
- Operate fishing gear, direct fishing operation and supervise fishing crew members
- Maintain engine, fishing gear and other on-board equipment
- Record fishing activities, weather and sea conditions
- Estimate costs of operations and plan budget for each fishing season
- Establish fish marketing plan and keep records of all financial transactions
- May transport fish to processing plants or fish buyers.

Employment requirements

- Several years of experience as fishing vessel crew member or helper are usually required.
- A commercial fishing licence is required.
- Licences are required for each species of fish pursued.

Additional information

- Progression to master or mate on fishing vessels over 100 gross tonnes is possible with additional training, licensing and experience.

Classified elsewhere

- *Fishing Masters and Officers* (8261)
- *Fishing Vessel Deckhands* (8441)

8411 Underground Mine Service and Support Workers

Underground mine service and support workers perform a range of duties related to the operation of orepasses, chutes and conveyor systems, the construction and support of underground structures, passages and roadways, and the supply of materials and supplies to support underground mining. They are employed by coal, metal and non-metallic mineral mines.

Example titles

backfiller	materialman/woman
blaster helper	mine construction worker
cage tender	orepass tender
conveyor operator	pipeworker – underground mining
crusher operator	raise miner helper
driller helper – underground mining	skip tender
haulageman/woman	timberman/woman
lamp keeper	trainman/woman

Main duties

Underground mine service and support workers perform some or all of the following duties:

- Operate and maintain ore chutes or conveyor systems to control flow of ore or coal in underground mine
- Operate construction equipment such as bulldozer, grader or backhoe to build and maintain underground passages and haulageways
- Construct and repair wood or metal supports and structures such as bulkheads, platforms, drift doors and chutes using construction and mining tools
- Attach and extend ventilation and water pipes and related mine service
- Assist miners in setting up and operating various drills and other mining machinery
- Supply and maintain backfill distribution of sand, rock or other materials
- Operate diesel or electric track haulage equipment such as ore trains to distribute personnel and supplies and to convey ore from orepass to primary crusher or skip
- Maintain supply storage areas and maintain equipment and supplies such as explosives, drill bits, fire extinguishers, lamps and batteries
- Perform routine maintenance of machinery.

Employment requirements

- Completion of secondary school is usually required.

- Previous formal training of up to six weeks followed by periods of on-the-job training as a helper or in support occupations is usually required.
- Previous experience as a mine labourer is usually required.
- May be certified in the basic common core program in Ontario.
- Company licensing or certification is often required for occupations in this unit group.

Additional information

- Mobility is possible to other occupational groups in underground mining.
- There is mobility between employers within each of the three following sectors: underground coal mining, underground hard rock mining and underground potash, salt or soft rock mining.
- Mobility between these sectors is somewhat limited by differences in production technologies.

Classified elsewhere

- *Drillers and Blasters – Surface Mining, Quarrying and Construction (7372)*
- *Mine Labourers (8614)*
- *Underground Production and Development Miners (8231)*

8412 Oil and Gas Well Drilling Workers and Services Operators

Oil and gas well drilling workers operate drilling and service rig machinery as intermediate members of the rig crew. Oil and gas well services operators drive trucks and operate specialized hydraulic pumping systems to place cement in wells or to treat wells with chemicals, sand mixtures or gases to stimulate production. Workers in this unit group are employed by drilling and well service contractors and by petroleum producing companies.

Example titles

acid truck driver
blender operator – oil field services
cementer – oil field services
chemical services operator
coiled tubing operator
derrickman/woman

formation fracturing operator
motorman/woman – oil and gas drilling
nitrogen operator
pumper operator
pumpman/woman – oil field services

Main duties

Oil and gas well drilling workers perform some or all of the following duties:

- Align and manipulate sections of pipe or drill stem from platform on rig derrick during removal and replacement of strings of pipe, or drill stem and drill bit
- Operate and maintain drilling mud systems and pumps during drilling, and mix mud chemicals and additives
- Record mud flows and volumes and take samples
- Operate and maintain drilling rig diesel motors, transmissions and other mechanical equipment
- Assist in setting up, taking down and transporting drilling and service rigs
- Supervise floorhands and labourers.

Oil and gas well services operators perform some or all of the following duties:

- Drive well services truck to well site
- Assemble pumping equipment and attach pumps and hoses to wellhead
- Operate hydraulic pumping systems to pump chemicals, gases, sand, cement or other material into well
- Read gauges to monitor pressure, density, rate and concentration and adjust pumping procedure as required
- May mix chemicals and cements.

Employment requirements

- Completion of secondary school is required.
- Training of up to three months with an experienced operator is required for oil and gas well services operators.

- One year of experience as a floorhand, assistant or labourer is usually required.
- Certificates in first aid, hydrogen sulphide awareness, blowout prevention, workplace hazardous materials information system (WHMIS), transportation of dangerous goods (TDG), cryogenic safety or in other safety concerns may be required.

Additional information

- Progression to oil and gas well driller or service rig operator is possible with experience.
- Progression to supervisor of well services is possible for gas and oil well services operators.

Classified elsewhere

- *Oil and Gas Drilling, Servicing and Related Labourers* (8615)
- *Oil and Gas Well Drillers, Servicers, Testers and Related Workers* (8232)
- *Supervisors, Oil and Gas Drilling and Service* (8222)

8421 Chain Saw and Skidder Operators

Chain saw and skidder operators operate chain saws to fell, delimb and buck trees, and operate skidders to move or yard the felled trees from the logging site to the landing area for processing and transportation. They are employed by logging companies and contractors.

Example titles

bucker
chain saw operator
faller
feller
forest worker – logging

grapple skidder operator
landingman/woman
pieceworker – logging
skidder operator

Main duties

Chain saw and skidder operators perform some or all of the following duties:

- Operate chain saw to fell, delimb and buck trees at the logging site and loading area
- Operate cable, or grapple skidder to move or yard the felled trees from the logging site to the landing area for processing and transportation
- Assess site, terrain and weather conditions before felling and yarding trees
- May work as member of a team rotating between chain saw operation and skidder operation
- May maintain and perform minor repairs on skidders, chain saws and other equipment.

Employment requirements

- Completion of secondary school may be required.
- Completion of a college program for forest workers may be required.
- Formal training in chain saw operation and maintenance and several months of on-the-job training are usually provided.
- Previous experience as a logging and forestry labourer or logging machine operator may be required. Experience requirements vary depending on the type and location of woodlands operations.
- Provincial certification or a forest worker program certificate is required in some provinces.
- Trade certification for fallers is available, but voluntary in Quebec.
- Workplace hazardous materials information system (WHIMS) and St. John's first aid certificates may be required.

Additional information

- There is a trend toward company certification of chain saw operators in larger companies.
- Chain saw operators often must own and maintain their own chain saw.
- There is some mobility among jobs within this unit group as chain saw and skidder operators often work in teams and rotate jobs.
- Mobility may be limited from eastern and central forest zones to western forest zones where tree size or steep terrain may require different cutting and yarding methods.
- Mobility is possible to logging machinery operators.
- Progression to supervisory positions or self-employment as a logging contractor is possible with experience.

Classified elsewhere

- *Logging and Forestry Labourers* (8616)
- *Logging contractors and supervisors (in 8211 Supervisors, Logging and Forestry)*
- *Logging Machinery Operators* (8241)
- *Silviculture and Forestry Workers* (8422)

8422 Silviculture and Forestry Workers

Silviculture and forestry workers perform a variety of duties related to reforestation and to the management, improvement and conservation of forest lands. They are employed by logging companies, contractors and government services.

Example titles

clearing saw operator
forest firefighter
forestry crew worker
forestry worker
pieceworker – silviculture

scarification equipment operator
silviculture worker
spacing saw operator
thinning saw operator

Main duties

Silviculture and forestry workers perform some or all of the following duties:

- Assess site, select seedlings and plant trees using manual planting tools in reforestation areas
- Operate power thinning saw to thin and space trees in reforestation areas
- Operate chain saw to thin young forest stands
- Control weeds and undergrowth in regenerating forest stands using manual tools and chemicals
- Complete firefighting reports and maintain firefighting equipment
- Dig trenches, cut trees, pump water on burning areas to fight forest fires under direction of fire suppression officer or forestry technician
- Operate and maintain a skidder, bulldozer or other prime mover to pull a variety of scarification or site preparation equipment over areas to be regenerated
- Perform other silviculture duties such as collecting seed cones, pruning trees, assisting in planting surveys and marking trees for subsequent operations.

- Workplace hazardous materials information system (WHMIS) and transportation of dangerous goods (TDG) certificates may be required.
- A silvicultural worker's licence may be required.

Additional information

- There is some mobility among jobs in this unit group.
- Progression to supervisory positions is possible with experience.
- Progression to forestry technician or technologist is possible with additional education and training.

Classified elsewhere

- Arborists (in 2225 *Landscape and Horticulture Technicians and Specialists*)
- *Chain Saw and Skidder Operators* (8421)
- Forest nursery workers (in 8432 *Nursery and Greenhouse Workers*)
- *Forestry Professionals* (2122)
- *Forestry Technologists and Technicians* (2223)
- *Logging and Forestry Labourers* (8616)
- *Supervisors, Logging and Forestry* (8211)

Employment requirements

- Completion of secondary school may be required.
- Completion of a college or other specialized program for silviculture workers or forestry crew workers may be required.
- Formal training in power saw operation and maintenance and several months of on-the-job training are usually provided.
- Experience as a logging and forestry labourer may be required.
- A chemicals application licence is required.

8431 General Farm Workers

General farm workers plant, cultivate and harvest crops, raise livestock and poultry and maintain and repair farm equipment and buildings. This group includes operators of farm machinery. General farm workers are employed on crop, livestock, fruit, vegetable and specialty farms.

Example titles

beef cattle farm worker

cattle ranch labourer

dairy farm worker

farm machinery operator

general farm worker

grain farm worker

harvester machine operator

hatchery worker

poultry farm worker

vegetable farm worker

Main duties

General farm workers perform some or all of the following duties:

- Plant, fertilize, cultivate, spray, irrigate and harvest crops
- Feed and tend livestock and poultry
- Milk cows
- Operate and maintain farm machinery and equipment
- Detect disease and health problems in crops, livestock and poultry
- Examine produce for quality and prepare for market
- Set and monitor water lines, air flow and temperature in barns, pens and chicken coops
- Clean stables, barns, barnyards and pens.

General farm workers can become specialized in a particular type of crop or livestock production through experience.

Employment requirements

- There are no specific education or training requirements. However, a college certificate or specialized courses related to farming, such as farm equipment mechanics, agricultural welding, tree pruning and pesticide application, are available.
- Basic farm knowledge, usually obtained from working on a family farm, may be required for employment.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers* (8252)
- *Farmers and Farm Managers* (8251)
- *Farm Supervisors and Specialized Livestock Workers* (8253)
- *Harvesting Labourers* (8611)

8432 Nursery and Greenhouse Workers

Nursery and greenhouse workers plant, cultivate and harvest trees, shrubs, flowers and plants, and serve nursery and greenhouse customers. They are employed in indoor and outdoor nurseries and greenhouses.

Example titles

forest nursery worker

greenhouse worker

horticulture worker

hothouse worker

hydroponics worker

nursery worker

Main duties

Nursery and greenhouse workers perform some or all of the following duties:

- Prepare soil; plant bulbs, seeds and cuttings; graft and bud plants; and transplant seedlings and rooted cuttings
- Spray trees, shrubs, flowers and plants to prevent disease and pests
- Position and regulate greenhouse and outdoor irrigation systems to water plants and fields
- Dig, cut and transplant trees, shrubs, flowers and plants and prepare them for sale
- Provide information to customers on gardening and the care of trees, shrubs, flowers, plants and lawns
- May operate tractors and other machinery and equipment to fertilize, cultivate, harvest and spray fields and plants
- Maintain inventory and order materials as required
- Clean working area.

Employment requirements

- Completion of secondary school may be required.
- Completion of college courses in horticulture or a related field may be required.
- On-the-job training is provided.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Additional information

- Progression to supervisory positions, such as greenhouse supervisor, is possible with experience.

Classified elsewhere

- *General Farm Workers* (8431)
- *Harvesting Labourers* (8611)
- *Landscaping and Grounds Maintenance Labourers* (8612)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Silviculture and Forestry Workers* (8422)
- *Supervisors, Landscape and Horticulture* (8256)

8441 Fishing Vessel Deckhands

Fishing vessel deckhands perform a variety of manual tasks on commercial fishing voyages, and maintain fishing vessels. They are employed by establishments that operate commercial fishing vessels and by self-employed fishermen/women.

Example titles

crewman/woman, fishing vessel
deckhand, seiner
fishing vessel deckhand

icer, fishing vessel
netmender, fishing vessel
trawlerman/woman

Main duties

Fishing vessel deckhands perform some or all of the following duties:

- Prepare nets, lines and other fishing tackle, and operate fishing gear to catch fish and other marine life
- Clean, sort and pack fish in ice and stow catch in hold
- Repair nets, splice ropes and maintain fishing gear and other deck equipment
- Clean deck surfaces and fish hold
- Handle mooring lines during docking
- May steer vessels to and from fishing areas
- May prepare and cook meals for crew members.

Employment requirements

- There are no specific educational requirements.
- On-the-job training is provided.
- Trawlermen/women require at least one year of experience.
- Fishing vessel deckhands require a commercial fishing licence.

Additional information

- Fishing vessel deckhands may become skippers upon acquiring an entry licence and a boat.
- Fishing vessel deckhands may progress to watchkeeper or mate positions with additional training.

Classified elsewhere

- *Deck Officers, Water Transport* (2273)
- *Fishing Masters and Officers* (8261)
- *Fishing Vessel Skippers and Fishermen/women* (8262)

8442 Trappers and Hunters

Trappers and hunters trap and hunt wild animals for pelts or live sale. They are usually self-employed and work on a seasonal basis.

Example titles

fur trapper	sealer
game trapper	trapper
hunter	

Main duties

Trappers perform some or all of the following duties:

- Set traps with bait and position traps along trails
- Operate snowmobile or travel on foot, snowshoes or skis to patrol trapline
- Remove catch and reset traps and snares
- Kill and skin catch for pelts, and treat and pack pelts for marketing
- Trap live animals for sale to buyers or for relocation purposes
- Maintain and repair trapping equipment
- Maintain trails and access to trapping lines
- Trap designated animals for bounty or other control programs
- May monitor animal population in the trapping regions to ensure future sustainability.

Hunters perform some or all of the following duties:

- Operate boat or snowmobile or travel on foot to reach hunting area
- Kill wild animals using firearms or other weapons
- Skin dead animals for pelts using knives
- Treat, pack and transport pelts to processing plants or to public auctions
- Maintain hunting equipment
- May monitor animal population in the hunting regions to ensure future sustainability.

Trappers and hunters may specialize in trapping or hunting a particular kind of animal.

Employment requirements

- Completion of trapping or hunting courses may be required in some provinces.
- A provincial trapping or hunting licence may be required.

Additional information

- In some jurisdictions, trappers may be allocated trapping areas based on the amount of their experience.

Classified elsewhere

- Animal control trappers or nuisance control trappers (in 7444 Pest Controllers and Fumigators)
- Hunting guides (in 6442 Outdoor Sport and Recreational Guides)

8611 Harvesting Labourers

Harvesting labourers assist other farm workers to harvest, sort and pack crops.

Example titles

apple picker

berry picker

crop farm labourer – harvesting

fruit picker

harvest hand

tobacco picker

vegetable packer

Main duties

Harvesting labourers perform some or all of the following duties:

- Pick row and orchard crops
- Sort, weigh and pack fruit and vegetables at farm
- Load, unload and transfer crates, supplies, farm produce and products for transport
- Clean up racks, trays, and growing and packaging areas.

Employment requirements

- There are no specific education or training requirements.

Additional information

- Progression to other farm worker positions is possible with experience.

Classified elsewhere

- *Farmers and Farm Managers* (8251)
- *Farm Supervisors and Specialized Livestock Workers* (8253)
- *General Farm Workers* (8431)

8612 Landscaping and Grounds Maintenance Labourers

Landscaping and grounds maintenance labourers perform manual work to assist in the construction of landscapes and related structures, and to maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, landscaped interiors and other landscaped areas. They are employed by landscaping and lawn care companies, golf courses, cemeteries, and landscaping departments of governments and private establishments.

Example titles

bulb planter
cemetery labourer
gardening helper
golf course worker
grass cutter

grounds maintenance worker
landscape labourer
maintenance worker, parks
sod layer
transplanter

Main duties

Landscaping and grounds maintenance labourers perform some or all of the following duties:

- Spread top soil, lay sod, plant flowers, grass, shrubs and trees and perform other duties to assist with the construction of a landscape and related structures
- Cut grass, rake, fertilize and water lawns, weed gardens, prune shrubs and trees and perform other maintenance duties as directed by supervisor
- Operate and maintain power mowers, tractors, snowblowers, chain saws, electric clippers, sod cutters, pruning saws and other landscape maintenance equipment
- Spray and dust trees, shrubs, lawns and gardens, as directed, to control insects and disease
- Perform other manual duties to clean and maintain landscaped environments.

Employment requirements

- Some secondary school education may be required.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Additional information

- Progression to technical or supervisory occupations in landscaping and horticulture is possible with additional training or experience.

Classified elsewhere

- *Landscape and Horticulture Technicians and Specialists (2225)*
- *Nursery and Greenhouse Workers (8432)*
- *Residential and Commercial Installers and Servicers (7441)*
- *Supervisors, Landscape and Horticulture (8256)*

8613 Aquaculture and Marine Harvest Labourers

This occupational group includes aquaculture support workers, marine plant gatherers, shellfish diggers and other labourers in aquaculture and fishing. Aquaculture support workers are employed by public or private fish hatcheries and commercial aquatic farms. Marine plant gatherers and shellfish harvesters may be self-employed.

Example titles

aquaculture support worker	marine plant gatherer
clam digger	oyster picker
dulse gatherer	sea farm attendant
fish farm helper	seaweed gatherer
fish tagger	shellfish harvester
fry marker	

Main duties

Aquaculture support workers perform some or all of the following duties:

- Assist aquaculture technicians in operation of a fish hatchery or other aquatic farm
- Feed aquaculture stocks, vaccinate stocks, perform culling and marking or banding techniques and report any observed irregularities in stock
- Operate, maintain and clean pumps, filters, tanks and other aquaculture equipment and clean and maintain aquaculture enclosures
- Keep daily records of water flow and fish samples
- Grade and weigh aquaculture stocks
- Prepare aquaculture stocks for market
- Operate boats, if necessary, in marine aquaculture operations.

Marine plant gatherers perform some or all of the following duties:

- Rake seaweed, dulse or Irish moss from beach, rocks or shallow water and load into a cart, wagon or other receptacles
- Spread gatherings to dry and remove foreign objects
- Transport gatherings to processing plant.

Shellfish harvesters perform some or all of the following duties:

- Dig clams from beds with spade, fork or other instrument, or pick oysters
- Clean, sort and transport shellfish to market.

Employment requirements

- Some secondary school education is usually required.

- Shellfish harvesters require commercial fishing licences.

Classified elsewhere

- *Aquaculture Operators and Managers* (8257)
- *Fishing Vessel Deckhands* (8441)
- *Fishing Vessel Skippers and Fishermen/women* (8262)

8614 Mine Labourers

Mine labourers carry out a variety of general labouring duties to assist in the extraction of coal, minerals and ore, and in other services in support of underground mining. They are employed by coal, metal and non-metallic mineral mines.

Example titles

chute puller
mine helper
mine labourer

pit scaler – underground mining
shoveller – underground mining
underground labourer – mining

Main duties

Mine labourers perform some or all of the following duties:

- Assist other mine workers in maintaining or constructing underground installations
- Clean underground rooms, roadways, working areas and mining equipment and conveyances using hand tools
- Load, move, sort and pile materials and supplies
- Clear spills of ore or coal using hand and power tools.

Employment requirements

- Completion of secondary school is usually required.
- A short period of introductory training is provided.
- Mine labourers are registered in the basic common core program in Ontario.

Additional information

- There is mobility among jobs in this group.
- Progression to underground production and development miner or underground mine service and support worker is possible with experience and training.

Classified elsewhere

- *Underground Mine Service and Support Workers* (8411)
- *Underground Production and Development Miners* (8231)

8615 Oil and Gas Drilling, Servicing and Related Labourers

Labourers in this unit group carry out a variety of general labouring duties and operate equipment to assist in the drilling and servicing of oil and gas wells. This unit group also includes labourers who assist in geophysical prospecting for oil and gas. They are employed by drilling and well servicing contractors and by petroleum producing companies.

Example titles

floorman/woman – oil and gas drilling
helper, wireline
labourer, oil field
leasehand
roughneck

roustabout
service rig helper
shakerhand
swamper – oil and gas
well treatment helper

Main duties

Labourers in this unit group perform some or all of the following duties:

- Manipulate sections of pipe or drill stem at the rig floor during drilling and during the removal and replacement of strings of pipe or drill stem and drill bit
- Maintain drilling equipment on the drill floor
- Handle, sort and move drill tools, pipe, cement and other materials
- Clean up the rig area
- Assist in setting up, taking down and transporting drilling and service rigs and service equipment
- May drive a truck to transport materials and well service equipment.

Employment requirements

- Completion of secondary school may be required.
- Completion of introductory college or Petroleum Industry Training Service (PITS) courses may be required.
- Certificates in hydrogen sulphide awareness, workplace hazardous materials information system (WHMIS) or transportation of dangerous goods (TDG) may be required.

Additional information

- Progression to more senior operating positions is possible with experience.

Classified elsewhere

- *Oil and Gas Well Drillers, Servicers, Testers and Related Workers* (8232)
- *Oil and Gas Well Drilling Workers and Services Operators* (8412)

8616 Logging and Forestry Labourers

Logging and forestry labourers perform a variety of manual tasks such as attaching choker cables to logs, planting trees, clearing brush, spraying chemicals, cleaning up landing areas and assisting other workers in woodlands operations. They are employed by logging companies and contractors.

Example titles

chokerman/woman
forestry labourer
logging labourer

swamper – logging and forestry
tree planter, seasonal

Main duties

Logging and forestry labourers perform some or all of the following duties:

- Assist other workers at logging sites
- Attach chokers or cables to felled trees for yarding
- Plant trees using manual tools
- Spray herbicides from the ground using manual spraying equipment
- Clear trails through woodlands using chain saws
- Clean up landing areas at logging sites.

Employment requirements

- Completion of secondary school may be required.
- Completion of pre-employment safety courses may be required.
- Several weeks of formal and on-the-job training are provided.
- Workplace hazardous materials information system (WHMIS) certificate may be required.
- Chemicals application licence may be required.

Additional information

- There is mobility among jobs in this unit group.
- Progression to other positions, such as silviculture and forestry worker, chain saw and skidder operator or logging machinery operator, is possible with experience.

Classified elsewhere

- *Chain Saw and Skidder Operators* (8421)
- *Logging Machinery Operators* (8241)
- *Silviculture and Forestry Workers* (8422)





